DEAN ANTONIO F. MATEO, Ph. D. : Short Profile

* DEAN, COLLEGE OF ENGINEERING, ADAMSON UNIVERSITY, (1983 -1986) & (2001 – 2005);
* GRADUATE OF B.S. ELECTRICAL ENG' G, 1968, MAPUA INSTITUTE OF TECHNOLOGY;
* SUMMA CUM LAUDE, M.S. MANAGEMENT ENG' G, 1975, ADAMSON UNIVERSITY;
* BENEMERITUS, Ph.D. IN MANAGEMENT, 1982, UNIVERSITY OF SANTO TOMAS GRADUATE SCHOOL;
* PLASTIC EXTRUSION COURSE , 1977 , NEW YORK UNIVERSITY , U.S.A.
* MULTI-AWARDED INVENTOR, WITH 81 PATENT CERTIFICATES ;
* WIPO (GENEVA, SWITZERLAND), GOLD MEDAL AWARDEE AS BEST INVENTOR, 1994;
* PROFESSIONAL LECTURER ; ENG' G / MANAGEMENT/ RAINWATER HARVESTING SYSTEM CONSULTANT ;
* OUTSTANDING MANILA INVENTOR IN THE FIELD OF WATER SYSTEM, 1999;
* OUTSTANDING MAPUAN (TOM) FIELD OF INVENTIONS & PIONEERING ENDEAVOR, MIT HALL OF FAME;
* FIRST DIAMOND AWARDEE, UST GRADUATE SCHOOL HALL OF FAME, 1999;
* OUTSTANDING CITIZEN, FIELD OF SCIENCE AND TECHNOLOGY 2004;
* RESEARCH FELLOW OF SINGAPORE ROYAL INSTITUTE OF ENGINEERS 2014 ;
* CONSISTENT WINNER IN THE NATIONAL INVENTORS WEEK CONTESTS, NIW' 83, ' 84, ' 85, ' 87, ' 90, ' 94, ' 96, ' 98, '99, ' 03,' 06 & '08, EARNING A PLACE AT THE TAPI/DOST INVENTORS' HALL OF FAME;
* GOLD MEDAL AWARDEE , INPEX, "AMERICA' S LARGEST INVENTIONS EXPO", PITTSBURGH, U.S.A., 2008 ;

SEMINAR 23
SGRA' S KKK RESEARCH ADVOCACY
MAY 7, 2017 , AMECOS LECTURE ROOM

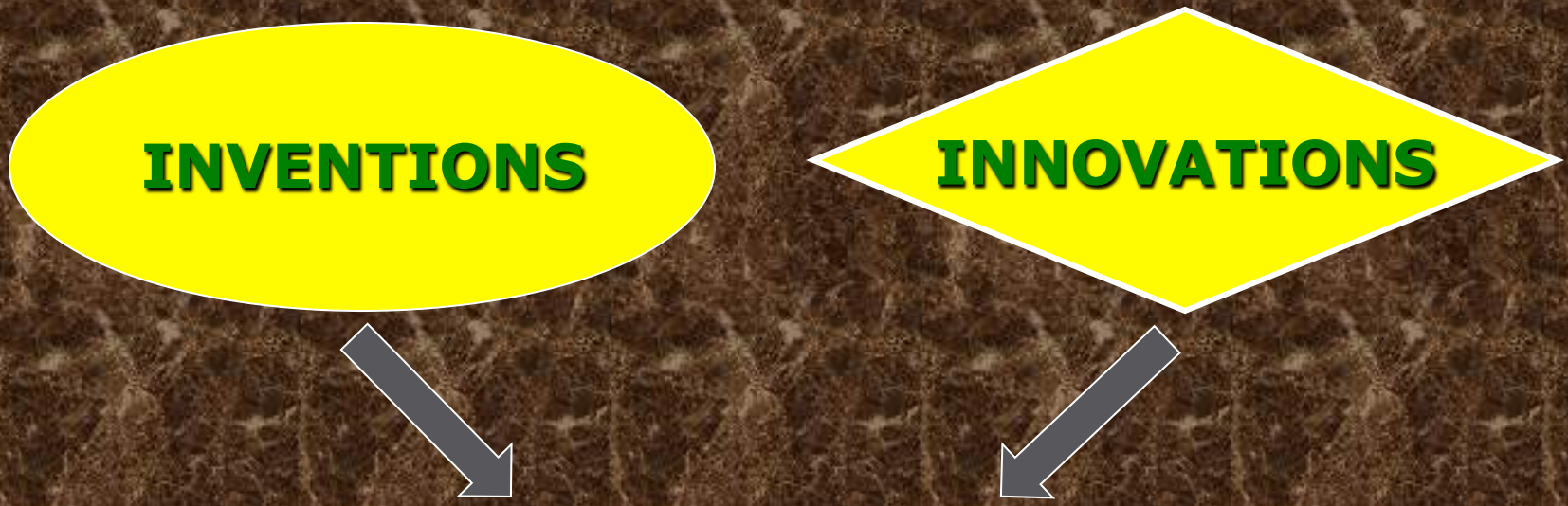
INNOVENTIONS VS CLIMATE CHANGE EFFECTS

BY DEAN ANTONIO F. MATEO, Ph.D.

WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO) 1994 BEST INVENTOR

RESEARCH FELLOW , SINGAPORE ROYAL INSTITUE OF ENGINEERS

RAINWATER HARVESTING SYSTEM / ENGINEERING CONSULTANT



INNOVENTIONS

Creative technological solutions (Technology, Product, Process , Practices or System) whether new or improved .

"Man is a creature of hope and *invention*; both of which *belie* the idea that things cannot be *changed*."

Tom Clancy

Innovation is not a process but a state of mind. Therefore, it can't be learned but felt.

Ivonne Kinser

FLOW OF IDEAS → CREATIVITY → INNOVENTIONS

ACTUAL NEEDS

PERCEIVED NEEDS

IDEAS

HUMAN MIND

INTELLECT

CREATIVITY

INVENTIONS

TECHNOLOGY

PRACTICES /SYSTEM

PRODUCTS

INNOVATION

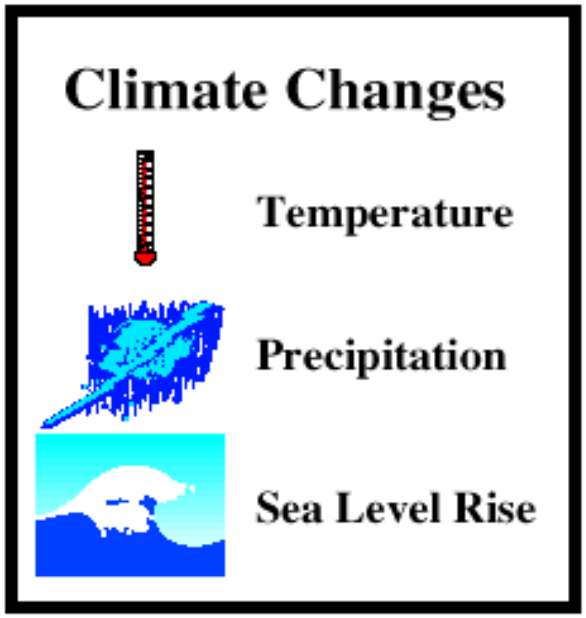
IMPROVEMENT

CONVENIENCE

SURVIVAL

CS

Potential Climate Change Impacts



Health Impacts

Weather-related Mortality
Infectious Diseases
Air Quality-Respiratory Illnesses

Agriculture Impacts

Crop yields
Irrigation demands

Forest Impacts

Change in forest composition
Shift geographic range of forests
Forest Health and Productivity

Water Resource Impacts

Changes in water supply
Water quality
Increased Competition for water

Impacts on Coastal Areas

Erosion of beaches
Inundate coastal lands
Costs to defend coastal communities

Species and Natural Areas

Shift in ecological zones
Loss of habitat and species

EPA

United States Environmental Protection Agency

PRESENTATION LIMITED TO THE FOLLOWING EFFECTS OR IMPACTS OF CLIMATE CHANGE ?

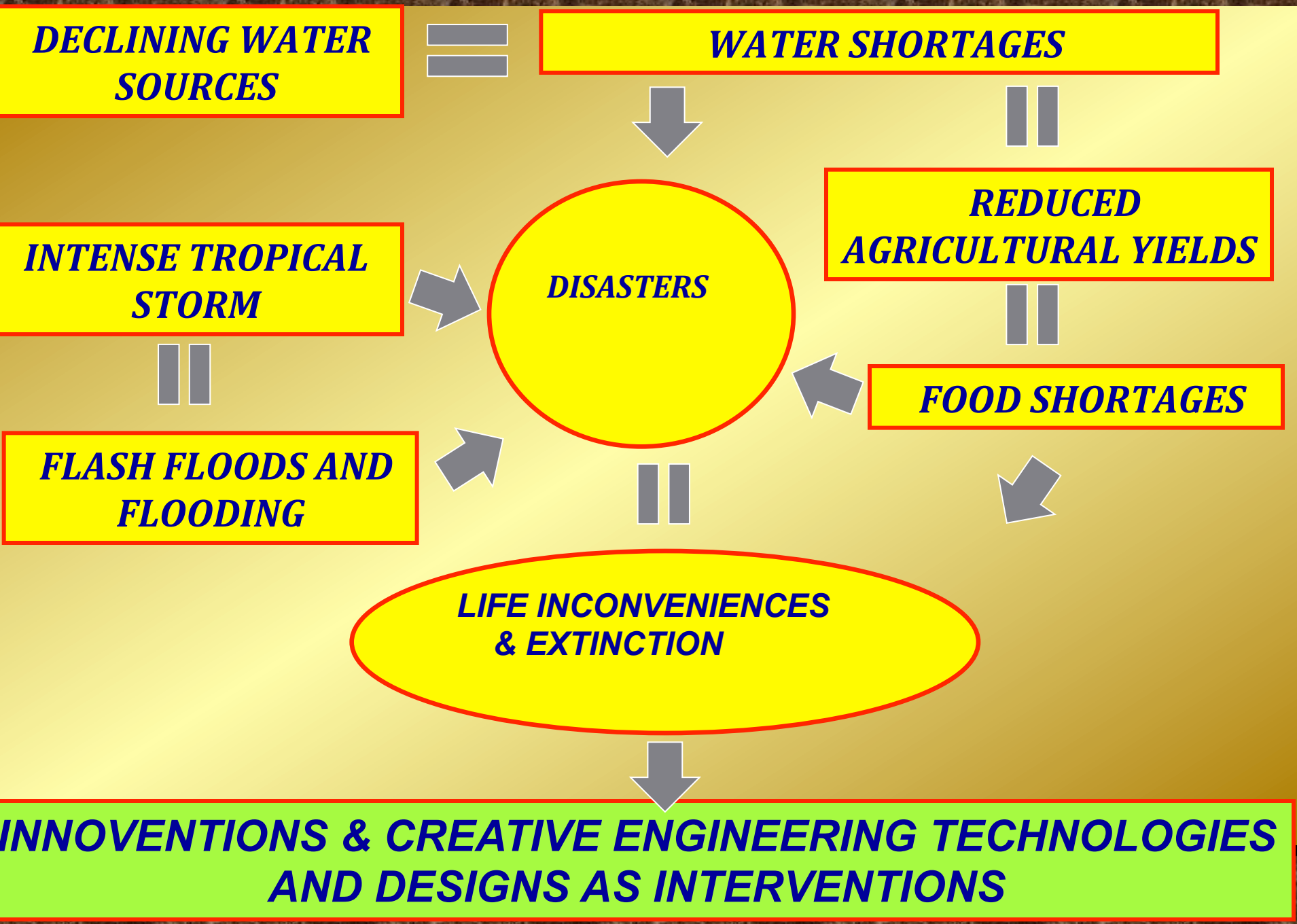
SEVERE WEATHER :

MORE & INTENSE TROPICAL STORMS

FLOODING RESULTING TO DESTRUCTION OF PROPERTIES / LOSS OF LIVES

DECLINING WATER SOURCES = WATER SHORTAGES

REDUCED AGRICULTURAL YIELDS = FOOD SHORTAGES


DECLINING WATER SOURCES
WATER SHORTAGES
REDUCED AGRICULTURAL YIELDS
FOOD SHORTAGES
LIFE INCONVENIENCES & EXTINCTION
FLASH FLOODS AND FLOODING
INTENSE TROPICAL STORM
DISASTERS
INNOVENTIONS & CREATIVE ENGINEERING TECHNOLOGIES AND DESIGNS AS INTERVENTIONS

PRESENT FILIPINO INNOVENTIONS & CONCEPT DESIGNS AS INTERVENTIONS VS CLIMATE CHANGE EFFECTS

INTENSE TROPICAL STORMS =

FLASH FLOODS , FLOODING

DESTRUCTION OF HOMES & BUILDING STRUCTURES

DECLINING WATER SOURCES = WATER SHORTAGES

REDUCED AGRICULTURAL YIELDS = FOOD SHORTAGES

THE CREATIVE/PRACTICAL OPTION

THE INNOVATIVE RAINWATER HARVESTING SYSTEM (IRHS) & COMPONENTS

NOTE : COMPLETE DETAILS IN SEPARATE
4 HOURS LECTURE MODULE

BASES / CONSIDERATIONS FOR RESEARCH /ADVOCACY ! ! !

WORLD OCCURRENCE: **The intensity, frequency, and duration in weather patterns and precipitations due to climate change resulted to droughts in one sector and great floods in neighboring areas.**

PHILIPPINES SITUATION : THE PHILIPPINES SEATS IN THE " PACIFIC RIM OF FIRE" AND IS DESCRIBED AS ASIA'S "TYPHOON MAT" AS THE SEAS AROUND IT SPAN DESTRUCTIVE TYPHOONS AND MONSOON RAINS .

THE IRONY : **Philippines rainfall provide more than 600**

n tons (720 bcm), 11 times sufficient to

ly annual water demand . . . . . being

gh devastating floods or natural


"The wars of the twenty-first century will be fought over water."
Ismail Serageldin
www.postconsumers.com

SOCIO –ECONOMIC CONSIDERATIONS

1.0 The 100 Million Filipinos need about 3,650 MCM of fresh water per year while Industries and Agricultural users need about 57,180 MCM or a Total Water Demand of 60,830 MCM.

The Potential Philippine Rainfall theoretically at 720,000 MCM is 11 times sufficient to supply the total annual water demand;

2.0 The use of Rainwater by Water Utilities even at 10 % of public water supply would have a tremendous economic effect and would secure surface and groundwater resources;

3.0 If every Filipino will use 1 cu. m. per month of rainwater, total savings will approximately be P 32 Billion per year;

LEGAL BASIS FOR THE INSTALLATION OF RAINWATER HARVESTING SYSTEM :

R.A. 6716 (1989)

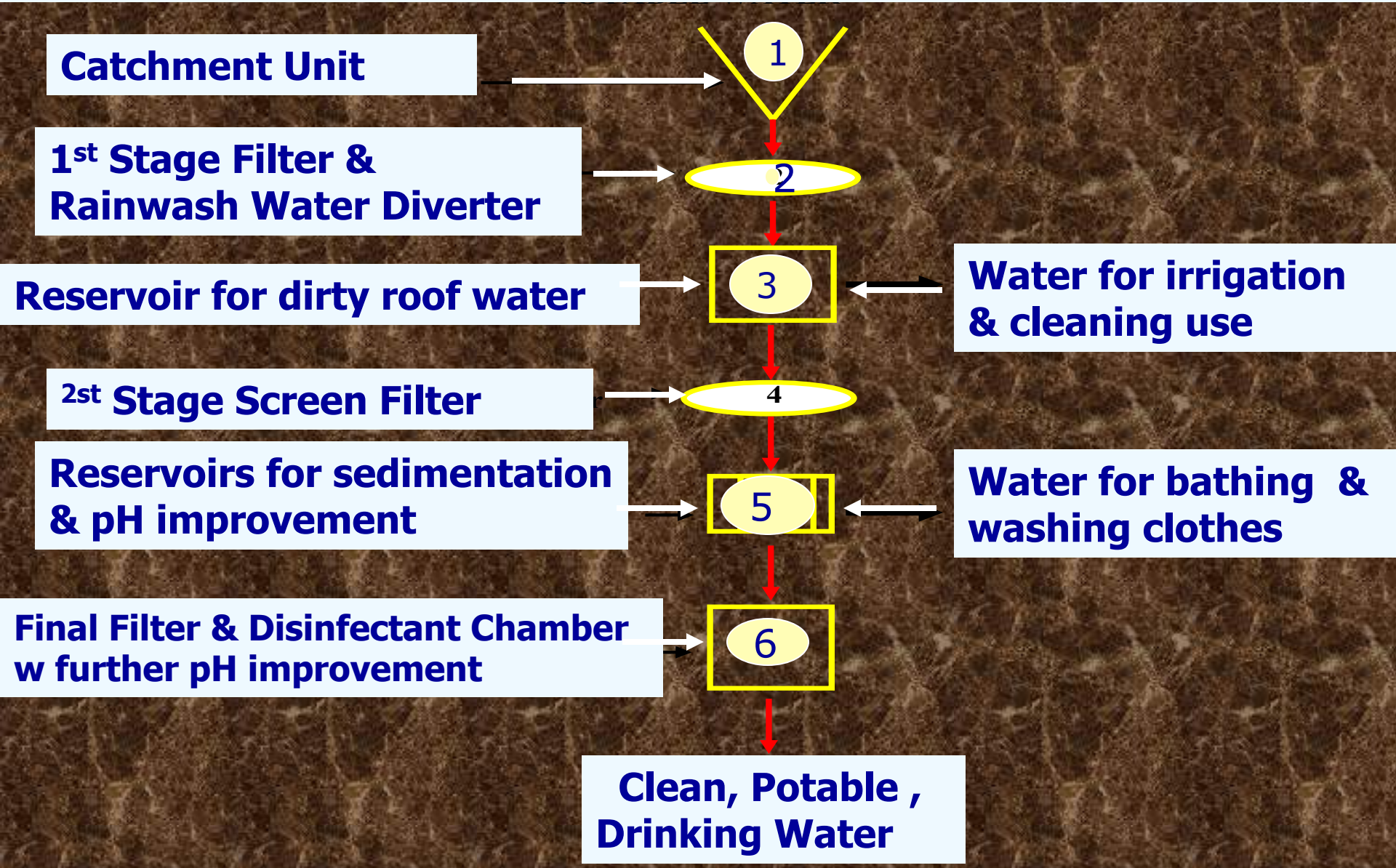
: An Act Providing for the Construction of Water Wells, Rainwater Collectors, Development of Springs and Rehabilitation of Existing Water Wells in All Barangays in the Philippines.

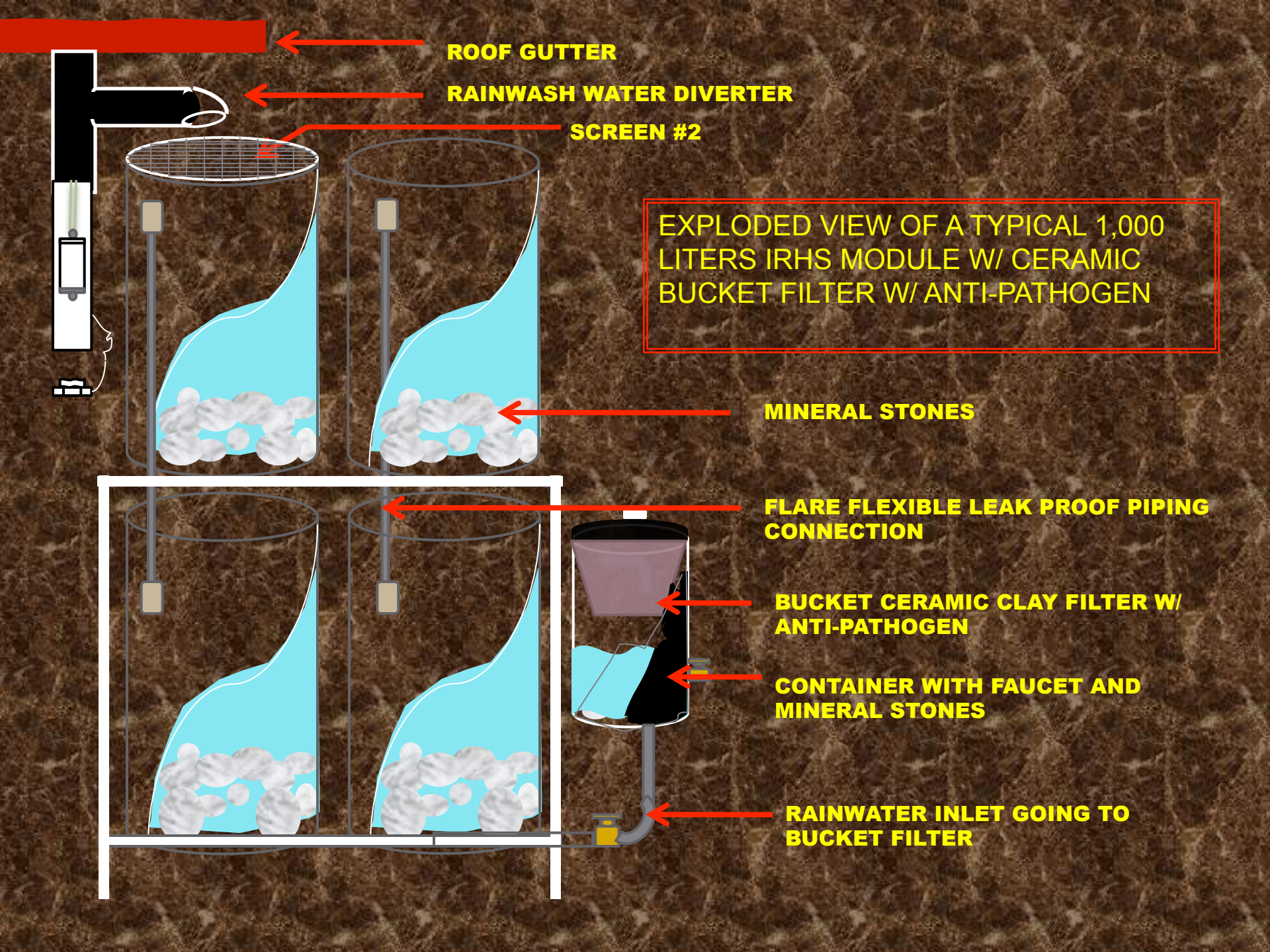
DESCRIPTION OF THE INVENTION

PCCI, AMY National IP Awardee :
Manila Hotel, October 13, 2011
(Invention Letters Patent: 1-2008-000384)

This Rainwater Harvesting System Technology was developed to convert rainwater and contaminated water to potable water which will pass all the 16 PNSDW parameters under the Physical and Chemical Tests with pH improved from 5.8 – 6.3 pH to 7.1 - 7.8 pH, and passing the Microbiological Test Results inclusive of the Heterotrophic plate count.

INNOVATIVE RAINWATER HARVESTING SYSTEM : PROCESS OF CONVERTING RAINWATER INTO CLEAN, POTABLE, DRINKING WATER



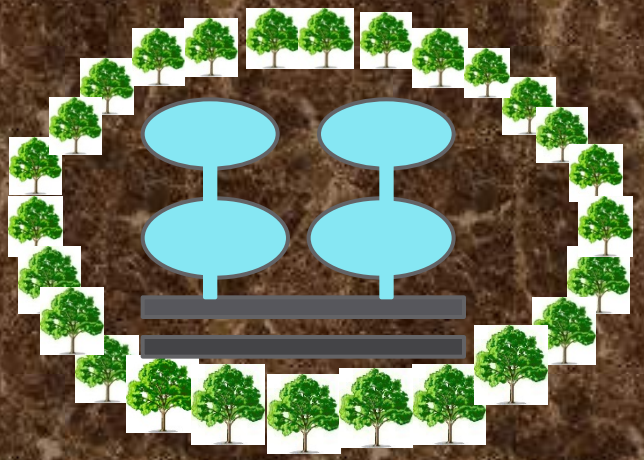

ROOF GUTTER
RAINWASH WATER DIVERTER
SCREEN #2
EXPLODED VIEW OF A TYPICAL 1,000 LITERS IRHS MODULE W/ CERAMIC BUCKET FILTER W/ ANTI-PATHOGEN
MINERAL STONES
FLARE FLEXIBLE LEAK PROOF PIPING CONNECTION
BUCKET CERAMIC CLAY FILTER W/ ANTI-PATHOGEN
CONTAINER WITH FAUCET AND MINERAL STONES
RAINWATER INLET GOING TO BUCKET FILTER

THE INNOVATIVE RAINWATER HARVESTING SYSTEM (IRHS) : A FILIPINO DEVELOPMENT

IRHS ABOVE GROUND MODULES ((DRHSM & ROOF CATCHMENT)

AND

IRHS BELOW GROUND SILOS



IMPORTANCE OF THE INVENTION AS A CREATIVE INTERVENTION

A) USEFUL FOR HOUSEHOLDS, EDUCATIONAL INSTITUTIONS, INDUSTRIES AND THE COMMUNITIES (BOTH URBAN AND RURAL)

B) REDUCE COMPLETE DEPENDENCE FROM WATER PURIFYING CHEMICALS

C) CAN CO-EXIST WITH WATER UTILITY PROVIDERS

D) CAN BEST BE USED BY SCHOOL CHILDREN IN FAR FLUNG AREAS IN THE COUNTRY WHERE SAFE FRESH WATER IS NOT READILY AVAILABLE UTILIZING THEIR SCHOOL BUILDINGS AS CATCHMENT AREAS

E) NECESSARY FOR LOCAL GOVERNMENT UNITS IN THEIR EVACUATION CENTERS DURING TIME OF EMERGENCIES AND CALAMITIES

F) FULL UTILIZATION WILL BENEFIT FILIPINOS AND ENVIRONMENT, SAVING LIVES AND BECOMING OUR BEST OPTION TO CUSHION THE EFFECTS OF A WORST CASE SCENARIO OF FRESH WATER SHORTAGES, CLIMATE CHANGE AND DISASTERS.

CREATIVE RESEARCH BREAKTHROUGHS :

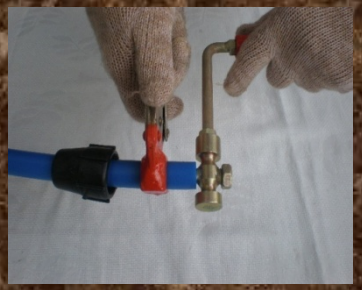
There were at least six (6) important breakthroughs or discoveries during the R & D activities : Still continuing, based on available funds:

1.0 Different mix, up to the 4th generation, of the clay ceramic filters utilizing local materials. Two (2) mixtures were found to be acceptable with the 1.85 -4.0 liters per hour flow rate.

CREATIVE RESEARCH BREAKTHROUGHS :

CREATIVE RESEARCH BREAKTHROUGHS :

2.0 The development of a 1,000 liters IRHS Module, consisting of 4 x 55 gallons P.E. tanks with steel platform, with double flare flexible piping connection, valves, sand trap filter, faucets, rainwash water diverter and the ceramic / clay filter in 20 liters plastic container.





CREATIVE RESEARCH BREAKTHROUGHS :

3.0 The development of a Rainwash Water Diverter, a cleaner rainwater to the IRHS Storage Tanks. This Patented Rainwash Water Diverter used discarded aluminum can as part of the rubber flap valve assembly, an environmentally friendly development.

Internal components of the Rainwash Water Diverter, utilizing the discarded aluminum can , tested and installed in residential and office buildings.

CREATIVE RESEARCH BREAKTHROUGHS :

4.0 The use of the invented double flare flexible piping connection that ensure leak-proof system and ease of installation.








CREATIVE RESEARCH BREAKTHROUGHS :

5.0 Other breakthroughs are the development of some portable equipment and machines needed to produce the ceramic candle and bucket type filters.

Gas Furnace

Bucket Filter Molding Unit

Candle Filter Molding Unit

CREATIVE RESEARCH BREAKTHROUGHS :

6.0 Finally, the breakthroughs in the experimentations on mineral rocks resulted to the correction of the pH of rainwater normally between 5.8 to 6.3 pH which is acidic. Pure water has a pH of 7.0. Experimentation on at least 16 mineral stones available in the locality revealed three (3) of these stones which can correct pH and raise it from 7.1 to 7.8 pH. The need to look into and test the efficacy of other mineral stones available locally that can improve pH from acidity to alkaline is obviously necessary.

R & D BREAKTHOUGHS : CONTRIBUTIONS TO S & T

THE HEART OF THE SYSTEM

R & D BREAKTHOUGHS : CONTRIBUTIONS TO S & T

The development of the Ceramic Clay Filters, Bucket and Candle, with anti-pathogen is the HEART of the System when clean, potable drinking water is required. ***This "Pinoy Technology " of rainwater harvesting and converting rainwater and contaminated water to potable water will pass all the 16 PNSDW parameters under the Physical and Chemical Tests with pH improved from 5.8 – 6.3 pH to 7.1 -7.8 pH, and passing the Microbiological Test Results inclusive of the Heterotrophic plate count.***

THE INNOVATIVE RAINWATER HARVESTING SYSTEM (IRHS) : DIFFERENT DESIGNS IN OPERATION

R &D STARTED IN 1981 USING RAINWATER FOR IRRIGATION AND CLEANING AND NOW 100% RAINWATER UTILIZATION INCLSUSIVE OF BATHING & DRINKING USES SINCE 2008

DIRECT RAINWATER HARVESTING MODULE

FOLDABLE RAINWATER CATCHMENT DESIGN 1

FOLDABLE RAINWATER CATCHMENT DESIGN 2

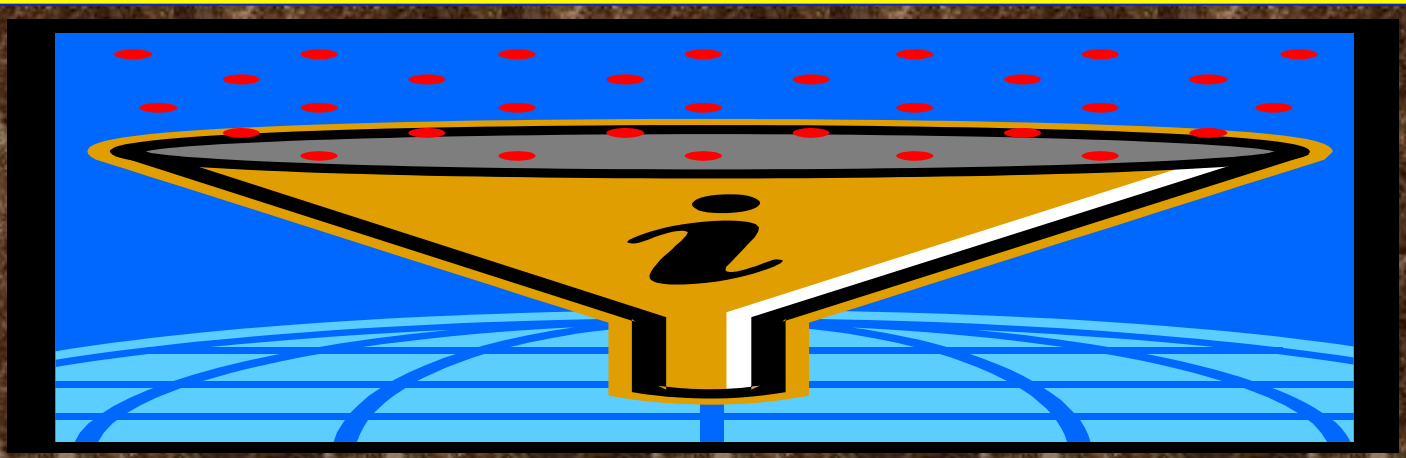
FOLDABLE INVERTED UMBRELLA CATCHMENT UNIT

RAINWATER HARVESTING MODULE USING THE ROOF AS CATCHMENT AREA AND PIPELINE CONNECTED TO WATER UTILITY LINE WITH CHECK VALVE

PHYSICAL / CHEMICAL

MICROBIOLOGICAL

TEST RESULTS



ENVIRONMENTAL-HEALTH LABORATORY SERVICE COOPERATIVE

50 Holy Spirit Drive, Don Antonio Heights, QC
Tel. 428-2698 / Telfax 931-0838 / Res. 433-5777
DOH Accreditation No. 024

PHYSICAL / CHEMICAL TEST RESULT

Amecos-Dost Project
#34 Alma Jose St., Zabarte Rd., Caloocan City
Attention : Dr. Antonio F. Mateo

TR # 18485
SR # 0808317
Date Issue :August 11, 2008

Sample Description : *Rain Water*
Sample Source : *Others - Filtered RW @ RH-1*
Date Submitted : *August 05, 2008*

Parameters	Unit	Method of Detection	Results	PNSDW**** Standards	Remarks
Physical					
Color	TCU	2120 Visual Comparison-Chloroplatinate*	3	5	**PASSED**
Odor	-	2150 Threshold Odor Test*	unobjectionable	unobjectionable	**PASSED**
Taste	-	2160 Flavor Threshold Taste*	not done	unobjectionable	-
Turbidity	NTU	2130 Nephelometric*	4.2	5	**PASSED**
Chemical					
pH @ 25.0 °C	-	4500-H+ Electrometric*	7.10	6.5-8.5****	**PASSED**
Total Hardness as CaCO3	mg/L	2340 EDTA Titrimetric*	11.58	300	**PASSED**
Chloride	mg/L	4500-Cl- Argentometric*	8.42	250	**PASSED**
Iron	mg/L	3111 Flame Atomic Absorption Spectometry*	ND(MDL=0.05 mg/L)	1.0	**PASSED**
Manganese	mg/L	3111 Flame Atomic Absorption Spectometry*	ND(MDL=0.01 mg/L)	0.5	**PASSED**
Sulfate	mg/L	4500-SO4-2 Turbidimetric*	1.14	250	**PASSED**
Total Dissolved Solids	mg/L	2540 Gravimetric*	58	500****	**PASSED**
Nitrate	mg/L	4500-NO3- Electrode Method*	ND(MDL=0.10 mg/L)	50	**PASSED**
Fluoride	mg/L	4500-F- Ion Selective*	ND(MDL=0.02 mg/L)	1.0	**PASSED**
Lead	mg/L	3111 Flame Atomic Absorption Spectometry*	ND(MDL=0.006 mg/L)	0.01	**PASSED**
Copper	mg/L	3111 Flame Atomic Absorption Spectometry*	ND(MDL=0.016 mg/L)	1.0	**PASSED**
Chromium (Total)	mg/L	3111 Flame Atomic Absorption Spectometry*	ND(MDL=0.02 mg/L)	0.05	**PASSED**

Note: Test result is based on sample as received.
ND - Not Detected, MDL - Method Detection Limit
****Limit applies only to sample description printed above

References:
*Standard Methods for the Examination of Water & Wastewater, American Public Health Association, American Water Works Association, 21st ed., 2005
**Validate Method
***Philippine National Standards for Drinking Water, 2007

Christian Bryan G. Dulin 0010078
Chemist

Marilou I. Sumera, Chem. 04041
Laboratory Head

Annex "I"

SOURCE	Standard	w/ Antibacterial Agent	Result
RW Filtered @ CD-1			
a) Microbiological Test			
Total Coliform	less than 1.1	less than 1.1	**Passed**
Fecal Coliform	less than 1.1	less than 1.1	**Passed**
b) Physical / Chemical Test			
Color	5	3	**Passed**
Odor	unobjectionable	unobjectionable	**Passed**
Taste	unobjectionable	unobjectionable	**Passed**
Turbidity	5	1.8	**Passed**
pH	6.5-8.5****	8.0	**Passed**
Total Hardness as CaCO3	300	zero	**Passed**
Chloride	250	zero	**Passed**
Iron	1.0	ND(MDL=0.016mg/L)	**Passed**
Manganese	0.5	ND(MDL=0.11mg/L)	**Passed**
Sulfate	250	ND(MDL=0.15mg/L)	**Passed**
TDS	500****	10	**Passed**
Nitrate	50	0.10	**Passed**
Flouride	1.0	0.10	**Passed**
Lead	0.01	ND(MDL=0.0013mg/L)	**Passed**
Copper	1.0	ND(MDL=0.006mg/L)	**Passed**
Chromium	0.05	ND(MDL=0.001mg/L)	**Passed**

Date Tested: September 8, 2008

SOURCE	w/ Antibacterial Agent	Result
RW Filtered @ CD-80B		
a) Microbiological Test		
Total Coliform	less than 1.1	**Passed**
Fecal Coliform	less than 1.1	**Passed**
b) Physical / Chemical Test		
Color	3	**Passed**
Odor	unobjectionable	**Passed**
Taste	unobjectionable	**Passed**
Turbidity	1.8	**Passed**
pH	8.4	**Passed**
Total Hardness as CaCO3	zero	**Passed**
Chloride	zero	**Passed**
Iron	ND(MDL=0.016mg/L)	**Passed**
Manganese	ND(MDL=0.11mg/L)	**Passed**
Sulfate	ND(MDL=0.15mg/L)	**Passed**
TDS	20	**Passed**
Nitrate	0.10	**Passed**
Flouride	0.10	**Passed**
Lead	ND(MDL=0.0013mg/L)	**Passed**
Copper	ND(MDL=0.006mg/L)	**Passed**
Chromium	ND(MDL=0.001mg/L)	**Passed**

Date Tested: August 2, 2008

ENVIRONMENTAL-HEALTH
LABORATORY SERVICE COOPERATIVE

50 Holy Spirit Drive, Don Antonio Heights, QC
Tel. 428-2698 / Telfax 931-0838 / Res. 433-5777
DOH Accreditation No. 024

MICROBIOLOGICAL TEST RESULT

TR # 18133
SR # 08072815
Date Issue :August 02, 2008

Amecos-Dost Project
#34 Alma Jose St., Zabarte Rd., Caloocan City
Attention : Dr. Antonio F. Mateo

Sample Description : *Rain Water*
Sample Source : *Others - Rain Water from DRWCM Filtered*
Date Submitted : *July 31, 2008*

Test	Unit	Method of Analysis	Results	PNSDW Standards	Remarks
Total Coliform	MPN/100 mL	Multiple Tube Fermentation Technique	less than 1.1	less than 1.1	**PASSED**
Fecal Coliform	MPN/100 mL	Multiple Tube Fermentation Technique	less than 1.1	less than 1.1	**PASSED**

Note: Test result is based on sample as received and is valid for (1) one month from date of issue.

Reference : Standard Methods for the Examination of Water & Wastewater, American Public Health Association, American Water Works Association, 21st ed., 2005
*Philippine National Standards for Drinking Water - 2007

Myla M. Arzobal RMT 48762
Microbiologist

Marilou I. Sumera, Chem. 04041
Laboratory Head

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50 Holy Spirit Drive, Don Antonio Heights, QC
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DOH Accreditation No. 024

MICROBIOLOGICAL TEST RESULT

TR # 19261
SR # 08081125
Date Issue :August 14, 2008

Amecos-Dost Project
#34 Alma Jose St., Zabarte Rd., Caloocan City
Attention : Dr. Antonio F. Mateo

Sample Description : *Rain Water*
Sample Source : *Others - Rain water from FRHM Filtered @ CD 2*
Date Submitted : *August 12, 2008*

Test	Unit	Method of Analysis	Results	PNSDW Standards	Remarks
Heterotropic Plate Count	CFU/mL	Pour Plate Method	284	less than 500	**PASSED**

Note: Test result is based on sample as received.

Reference : Standard Methods for the Examination of Water & Wastewater, American Public Health Association, American Water Works Association, 21st ed., 2005
*Philippine National Standards for Drinking Water - 2007

Myla M. Arzobal RMT 48762
Microbiologist

Marilou I. Sumera, Chem. 04041
Laboratory Head

SOME INNOVATIVE RAINWATER HARVESTING SYSTEM INSTALLATIONS, DESIGNS , USES

4000 Liters Innovative Rainwater Harvesting System: Polangui, Albay Installation

24,000 Liters IRHS Installation : ASIA PACIFIC CHRISTIAN COLLEGE AND SEMINARY, Montalban Seminary / School

SOME IRHS INSTALLATIONS

6,000 Liters IRHS Installation : MARIKINA SPORT /EVACUATION CENTER Marikina City , January 11,2011

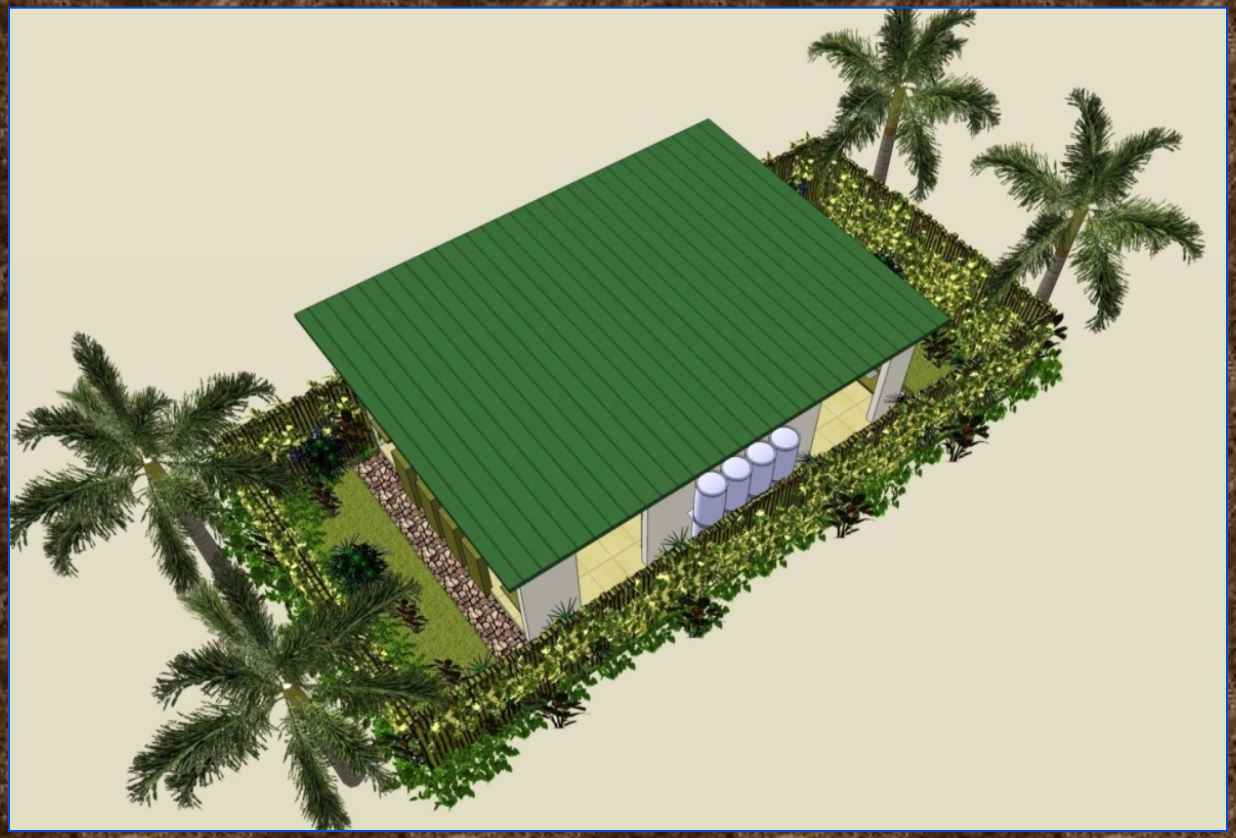
ADDITIONAL 12,000 LITERS IRHS INSTALLATIONS: ONE (1) MODULE FOR THE OFFICE OF THE MAYOR & ONE(1) MODULE FOR MARIKINA ENVIRONMENTAL MANAGEMENT OFFICE ,Marikina City , January 28,2012

SOME IRHS INSTALLATIONS

DOGHOUSE WITH 5,000 LITERS IRHS ON 2ND LEVEL , INSTALLED AND COMPLETED ON JULY 2, 2012

LUNETA GREEN TOILET

A PROJECT OF THE NATIONAL PARK DEVELOPMENT COMMITTEE -



GREEN TOILET & RAINWATER CISTERNS WITH IRHS

COMPLETED ON JULY 25, 2012 . FOURTEEN (14) GREEN TOILETS WITH 6,000 LITERS MODULES IRHS IN LUNETA NATIONAL PARKS UNDER THE NATIONAL PARKS DEVELOPMENT COMMITTEE

INNOVATIVE RAINWATER HARVESTING SYSTEM INSTALLATIONS

9,000 Liters Innovative Rainwater Harvesting System: Macampao Beach Resort Installations , Cabangan , Zambales, completed installation November 30, 2015

INNOVATIVE RAINWATER HARVESTING SYSTEM INSTALLATIONS

500 Liters Innovative Rainwater Harvesting System: AMECOS TREE HOUSE with SOLAR DC POWER / LED LIGHTINGS , Constuction Completed March 7, 2017

INNOVATIVE RAINWATER HARVESTING SYSTEM

LIFE SAVING KITS

DEVELOPED FOR EMERGENCY USE, FOR EVACUTIOAN CENTERS AND RESCUE OPERATION

PORTABLE EMERGENCY WATER FILTER ASSEMBLY

REGULAR ASSEMBLY

ASSEMBLY WITH BISCUITS & CANDIES

PORTABLE LIFE SAVING WATER FILTER CANISTER

REGULAR WATER FILTER CANISTER

WATER FILTER CANISTER W / BISCUITS AND CANDIES

THE INNOVATIVE RAINWATER HARVESTING SILOS

" ENGINEERING INTERVENTIONS AGAINST TYPHOONS, FLASHFLOODS,& OTHER DISASTERS"

A CREATIVE CONCEPT DESIGN

MULTI-USES

* FISH POND SILO * DUCK POND SILO * IRRIGATION SILO * POTABLE WATER * *MUD TRAP SILO * FLASH FLOOD SILO * WATER SURGE SILO * CADAVER SILO *OTHERS *

NOTE : COMPLETE DETAILS IN SEPARATE

4 HOURS LECTURE MODULE

DAMS VERSUS INNOVATIVE RAINWATER (IRH) SILOS

FUNCTIONAL SIMILARITIES

DAM & IRH SILOS REGULATES WATER SUPPLY

* BOTH COLLECT FRESH WATER DURING PERIODS OF HEAVY RAINFALLS

* BOTH CAN BE USED TO CONTROL FLOOD WATER

* BOTH CAN SUPPLY A REGULATED AMOUNT OF WATER TO SURROUNDING AREAS FOR IRRIGATION AND DOMESTIC USE

* BOTH PROVIDE A BUFFER TO EXTREME OR IRREGULAR WE ATHER

ADVANTAGES & DISADVANTAGES
DAM

ADVANTAGES :

* CAN BE USED TO GENERATE HYDROELECTRIC POWER (CLEAN ENERGY)
* A SOURCE OF TOURISM IN OTHER COUNTRIES

DISADVANTAGES :

* SURROUNDING DRY AREAS WILL BE FLOODED
* DISPLACEMENT OF LOCAL POPULATION
* LOSS OF USE OF LAND PREVIOUSLY ACCESSIBLE DISRUPTING AGRICULTURAL ACTIVITIES
* DISRUPTS ECOSYSTEMS : DISPLACES EXISTING WILDLIFE

ADVANTAGES & DISADVANTAGES

IRH SILOS

ADVANTAGES :

* PRACTICAL INTERVENTION TO FLOODING PROBLEMS
* NON-DISPLACEMENT OF LOCAL POPULATION
* LAND MAINTAINCE ITS ACCESSIBILITY
* IMPROVED AGRICULTURAL PRODUCTIVITIES
* NO RISK OF EARTHQUAKE DEVASTATING EFFECTS
* NON DISPLACEMENT OF WILDLIFE
* FLOW OF RIVER REMAIN UNOBSTRUCTED THUS MAINTAINING FISH LIFE INCLUDING MIGRATORY FISH POPULATION.
* IMPROVE ECOSYSTEMS

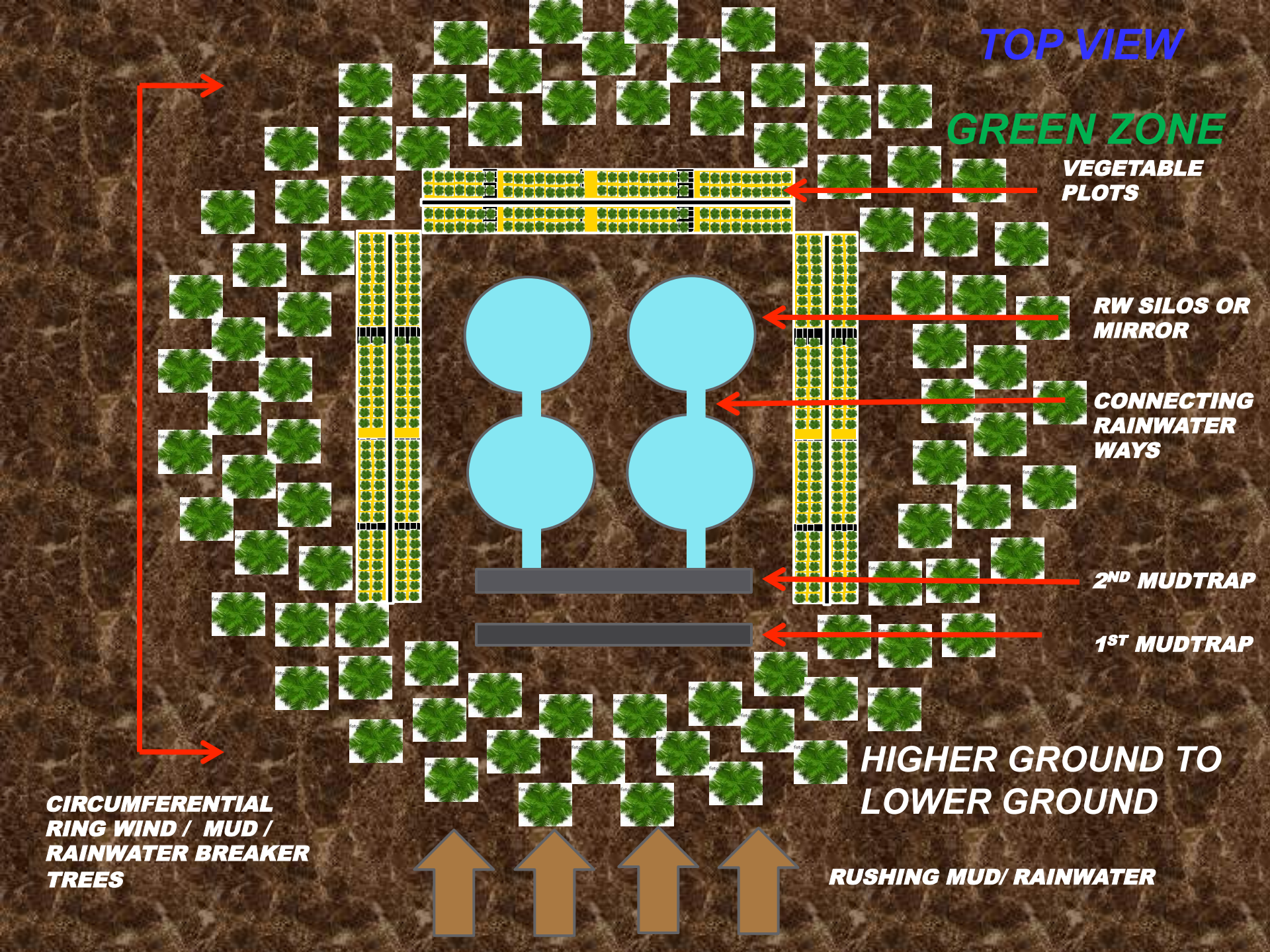
ADVANTAGES & DISADVANTAGES

IRH SILOS

DISADVANTAGES :

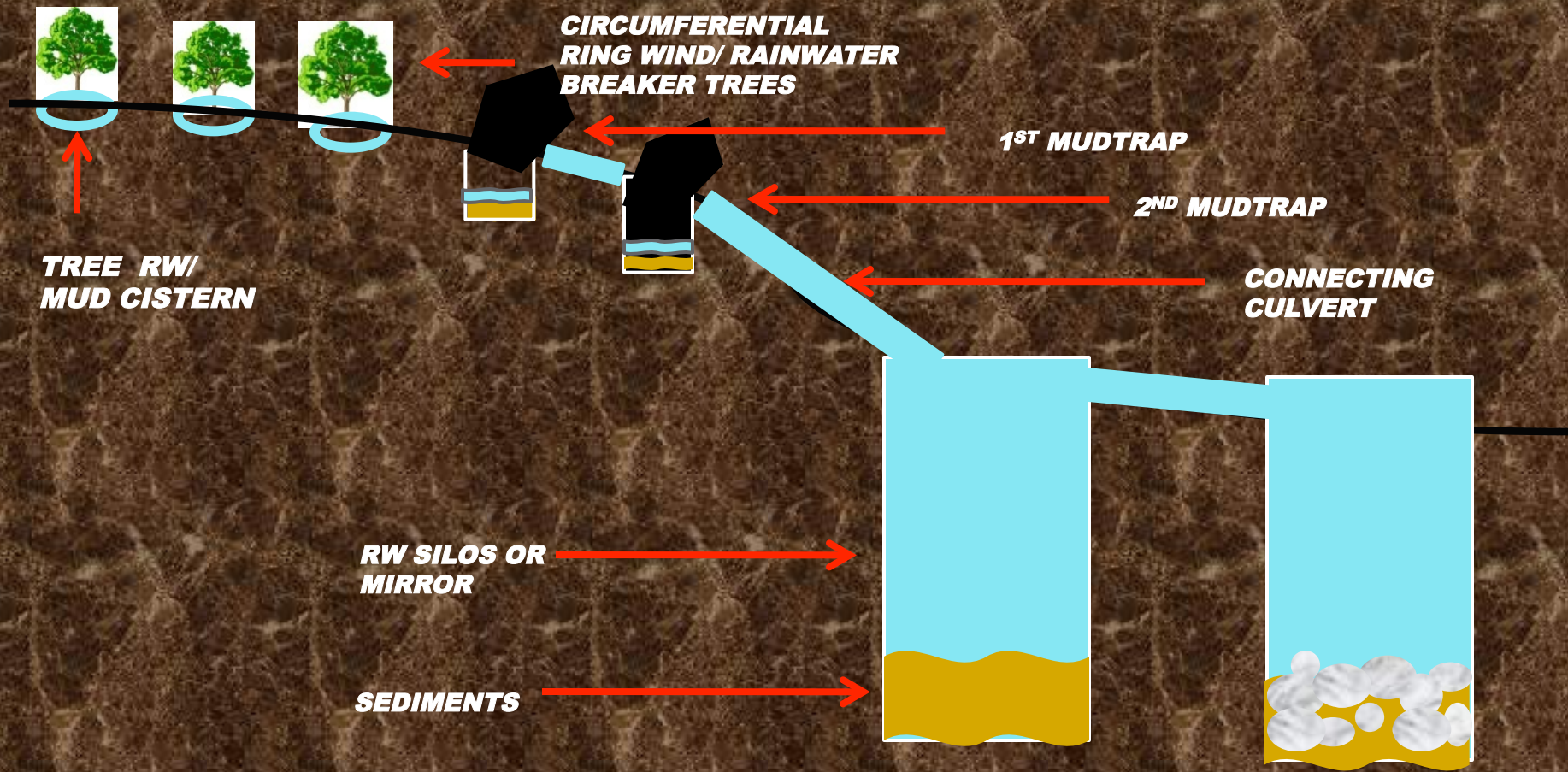
* NORMALLY NOT DESIGNED TO BE USED TO GENERATE HYDROELECTRIC POWER
* RELY ENTIRELY ON PRECIPITATIONS IN THE AREA AS ITS SOURCE
* HOLDING CAPACITY LIMITED ON AREA DESIGN

RAINWATER SILOS COMPLETE WITH MUD SCREENS AND WIND / FLOOD BREAKERS

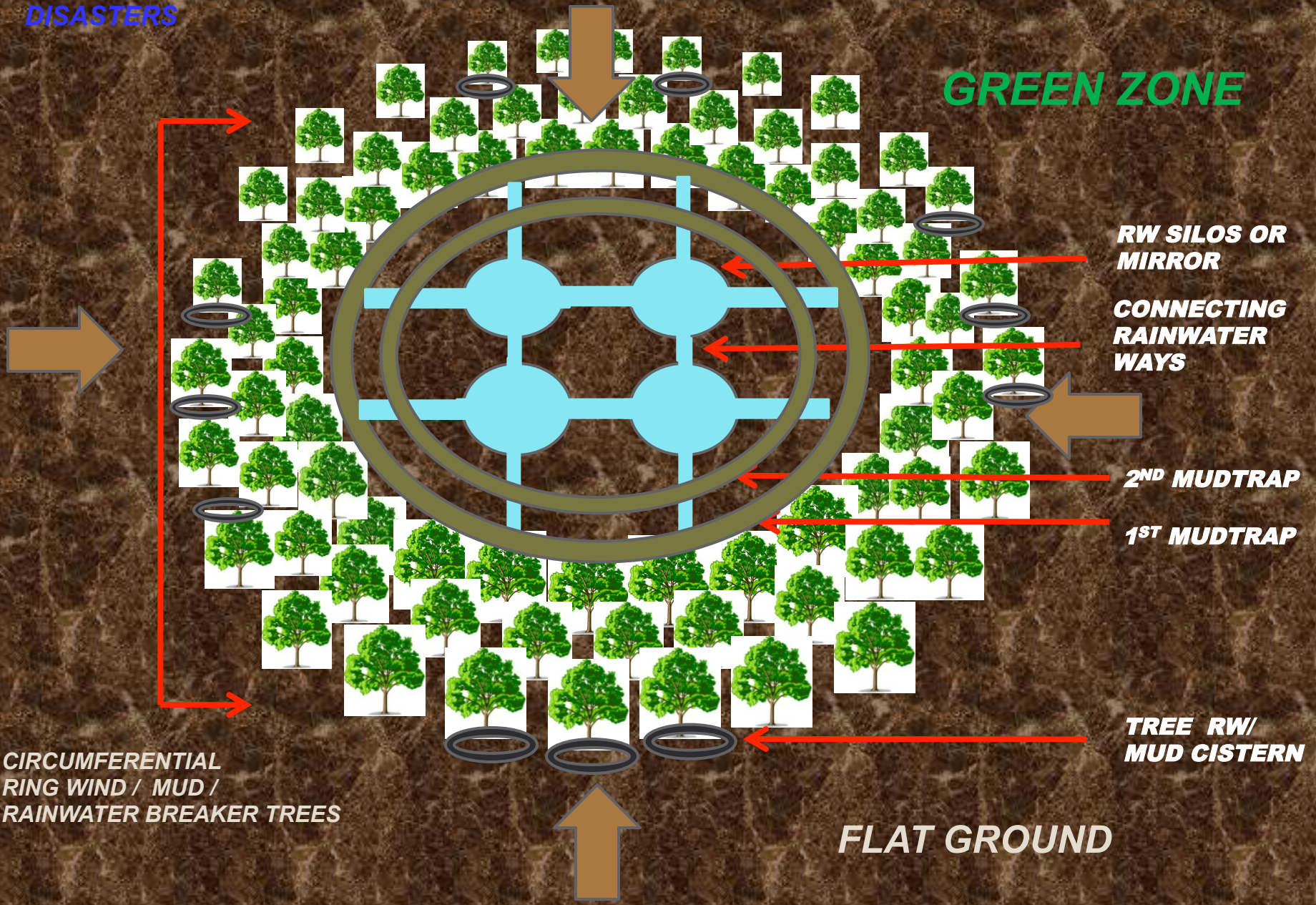

TOP VIEW
GREEN ZONE
VEGETABLE PLOTS
RW SILOS OR MIRROR
CONNECTING RAINWATER WAYS
2ND MUDTRAP
1ST MUDTRAP
HIGHER GROUND TO LOWER GROUND
CIRCUMFERENTIAL RING WIND / MUD / RAINWATER BREAKER TREES
RUSHING MUD/ RAINWATER

CROSS SECTIONAL VIEW OF GREEN ZONE - HIGHER GROUND TO LOWER GROUND AS CREATIVE ENGINEERING INTERVENTION AGAINST TYPHOONS, FLASH FLOODS , EARTHQUAKES AND OTHER DISASTERS

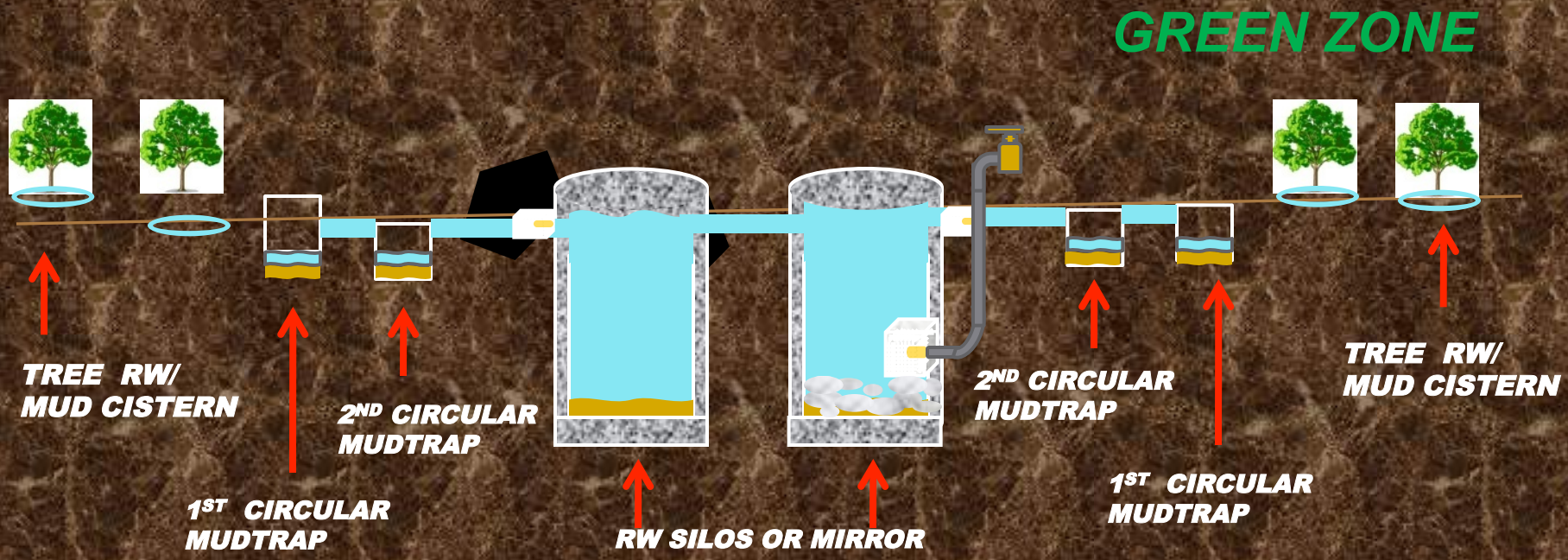
GREEN ZONE



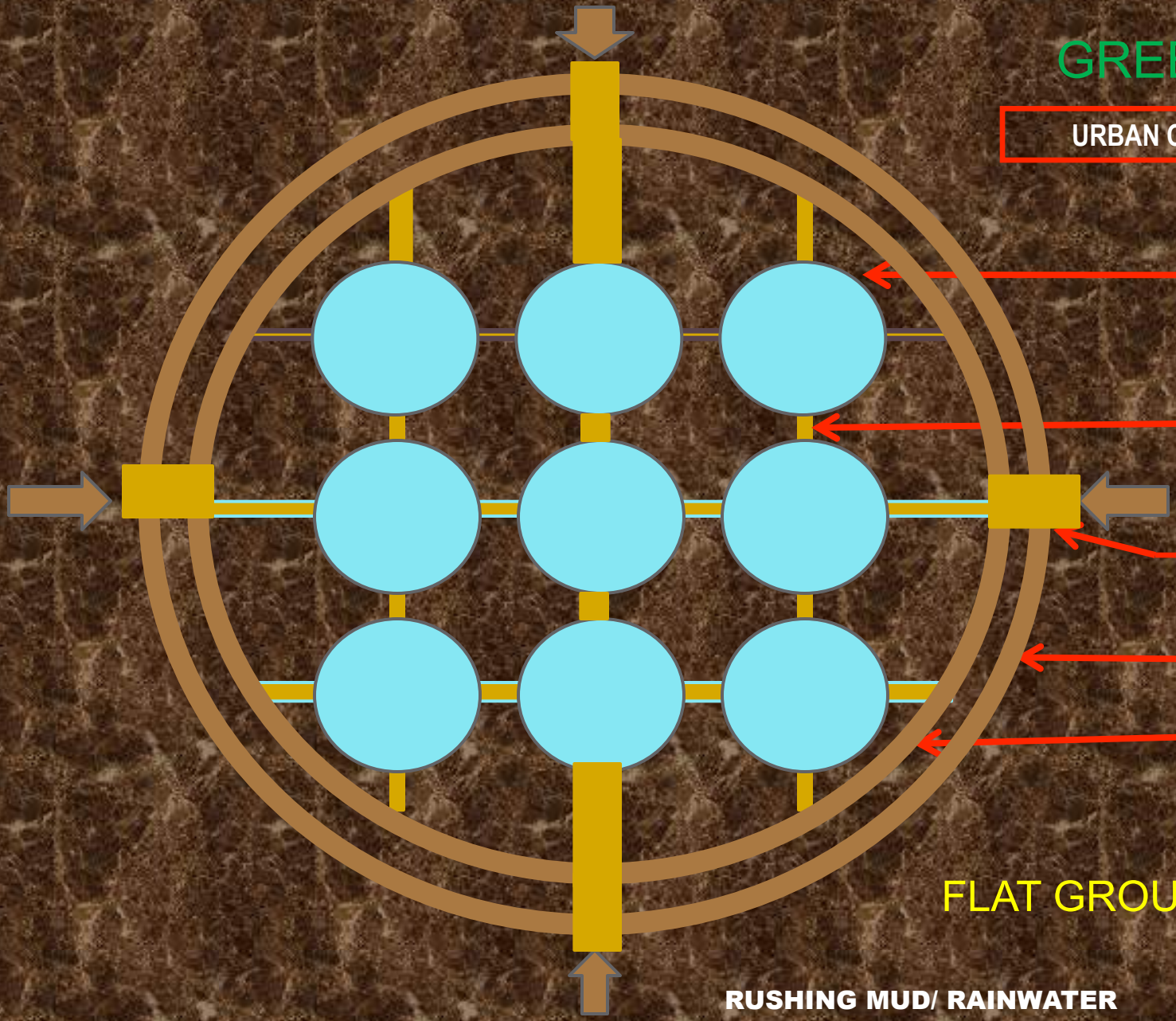
ENGINEERING INTERVENTION TO CUSHION EFFECTS OF CLIMATE CHANGE, WATER CRISIS & DISASTERS



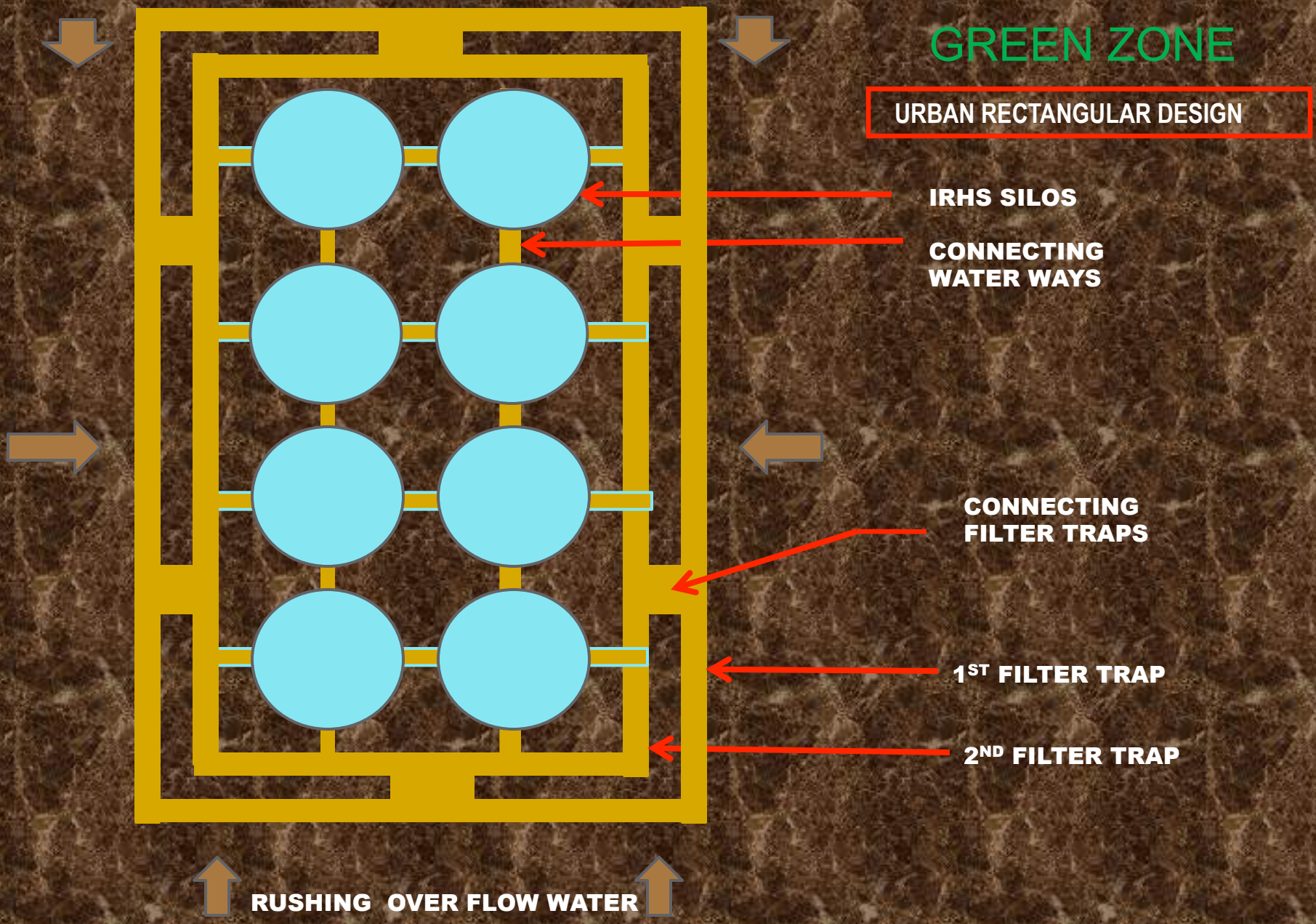
CROSS SECTIONAL VIEW OF GREEN ZONE - FLAT SURFACE AS ENGINEERING INTERVENTION TO CUSHION EFFECTS OF CLIMATE CHANGE, WATER CRISIS & DISASTERS



ENGINEERING INTERVENTION IN URBAN FLOOD PRONE AREAS / ADDITIONAL WATER SOURCE : INNOVATIVE RAINWATER MULTI-PURPOSE SILOS



ENGINEERING INTERVENTION : SERIES & PARALLEL PROTECTIVE MULTI-PURPOSE SILOS

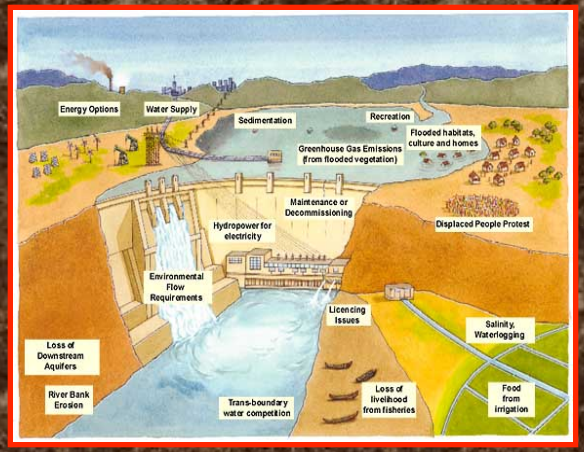


INNOVATIVE RAINWATER MULTI-PURPOSE SILOS UNDER FOOTBALL FIELD & OPEN PARKING AREAS ; SIDES OF COVERED COURTS IN COMBINATION WITH IRHS ABOVE GROUND , NEAR, DAMS, DIKES & SEA WALLS AS PROTECTIVE OPTIONS

FOOTBALL FIELD

PARKING /OPEN AREAS

C OVERED COURT



DAM

DIKE

SEA WALLS

DETAILS OF CONCEPT DESIGN CONSTRUCTION, VOLUME AND COST ESTIMATES IN A SEPARATE MODULE

THE FUTURE ?

CREATIVE PROPOSALS AS INTERVENTIONS

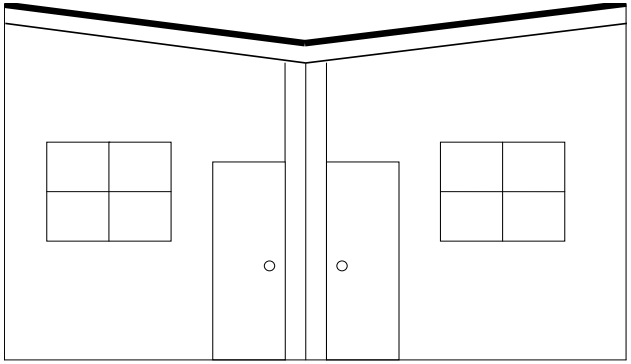
URBAN HOUSING & BUILDING DESIGNS FOR RAINWATER HARVESTING AND TO WITHSTAND SUPER TYPHOONS

FEATURES

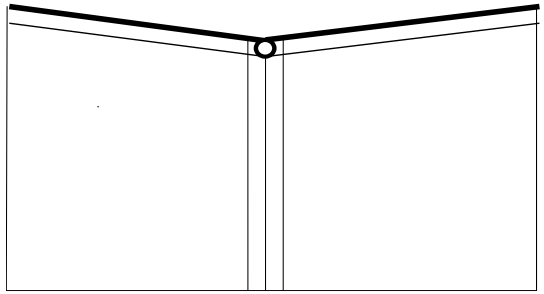
NEW ROOFING DESIGN ;
COMMUNAL RAINWATER HARVESTING;
COMMUNAL SEPTIC TANK;

LEAK-PROOF FLEXIBLE PLUMBING LINES

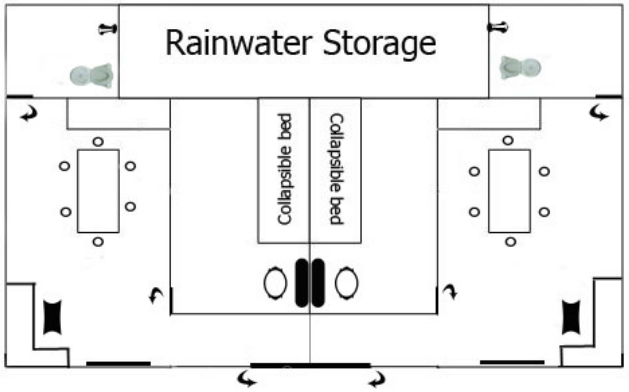
SAMPLE DESIGN OF A DUPLEX LOW COST HOUSE
REGULAR SIZE 4m. X 16 m. = 64 sq.m. or 32 sq. m/ unit



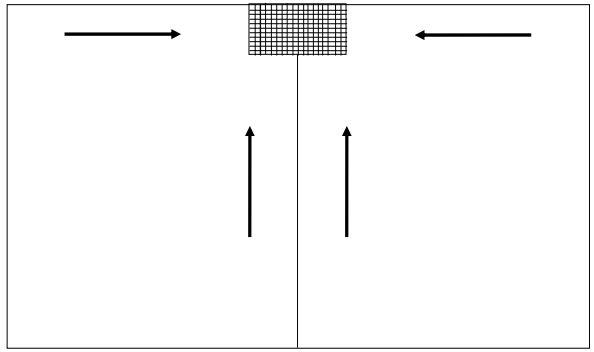
FRONT VIEW



BACK VIEW



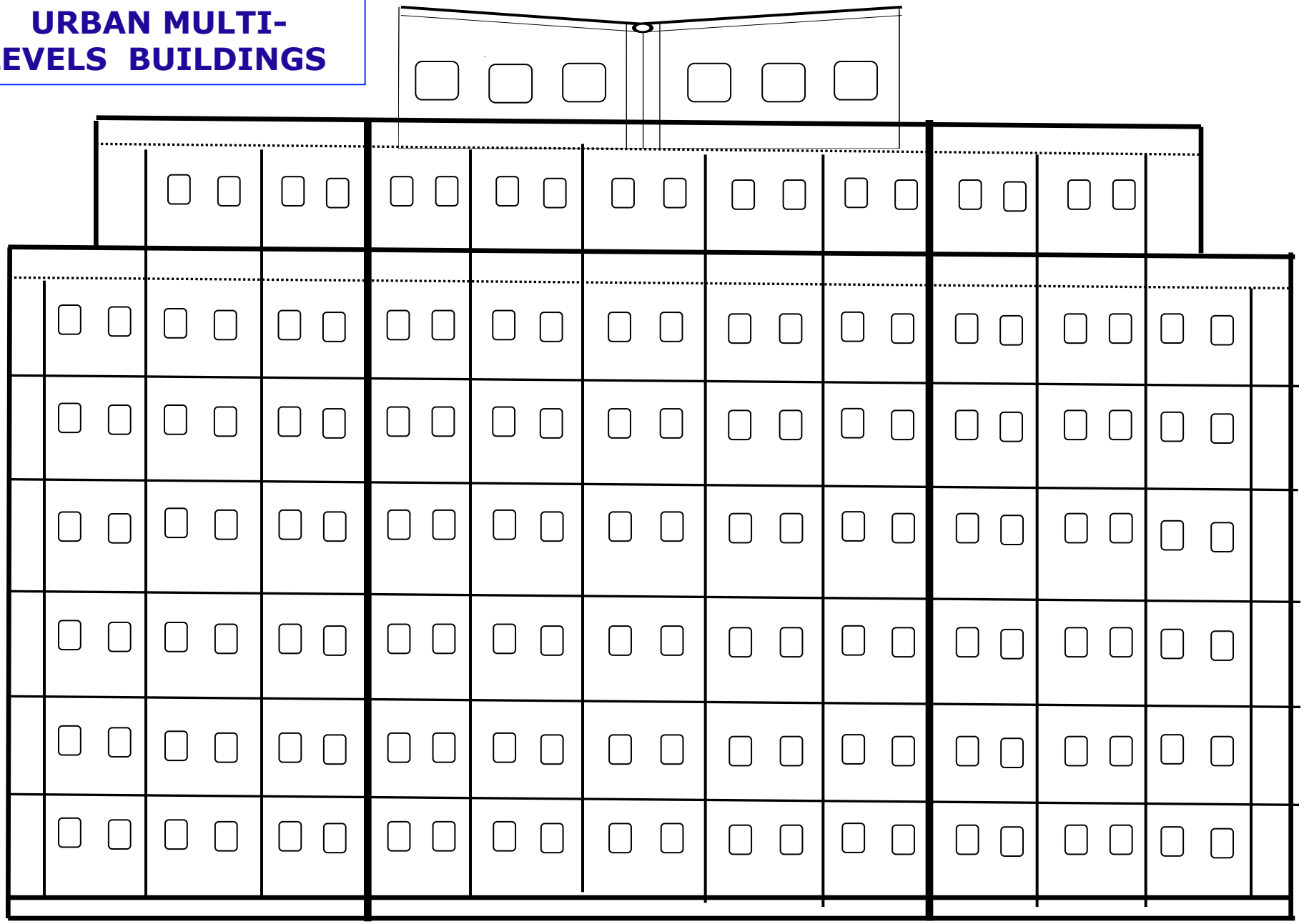
CUT –OUT VIEW

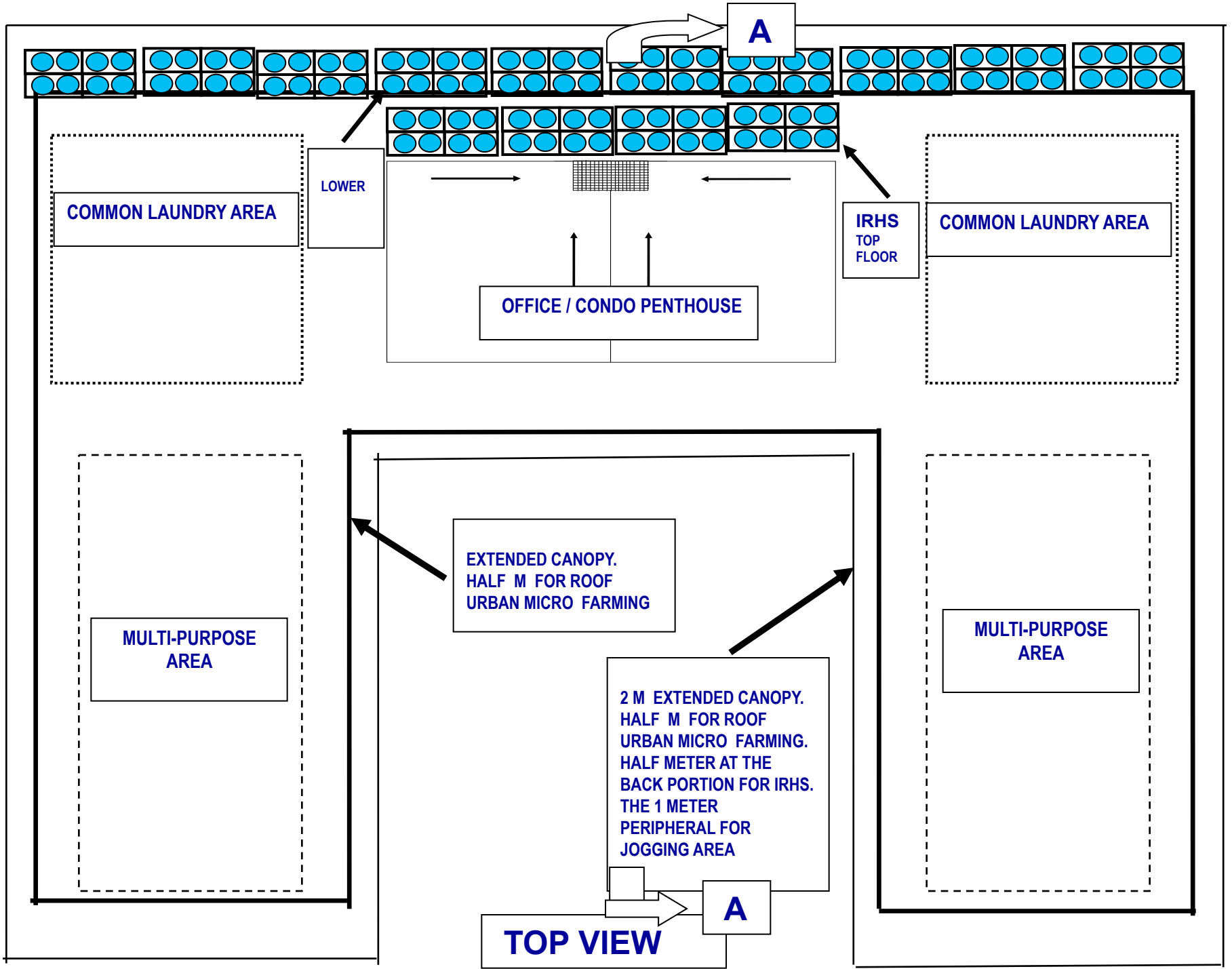


TOP VIEW

HIGH-RISE ENVIRON URBAN MULTI-LEVELS BUILDINGS

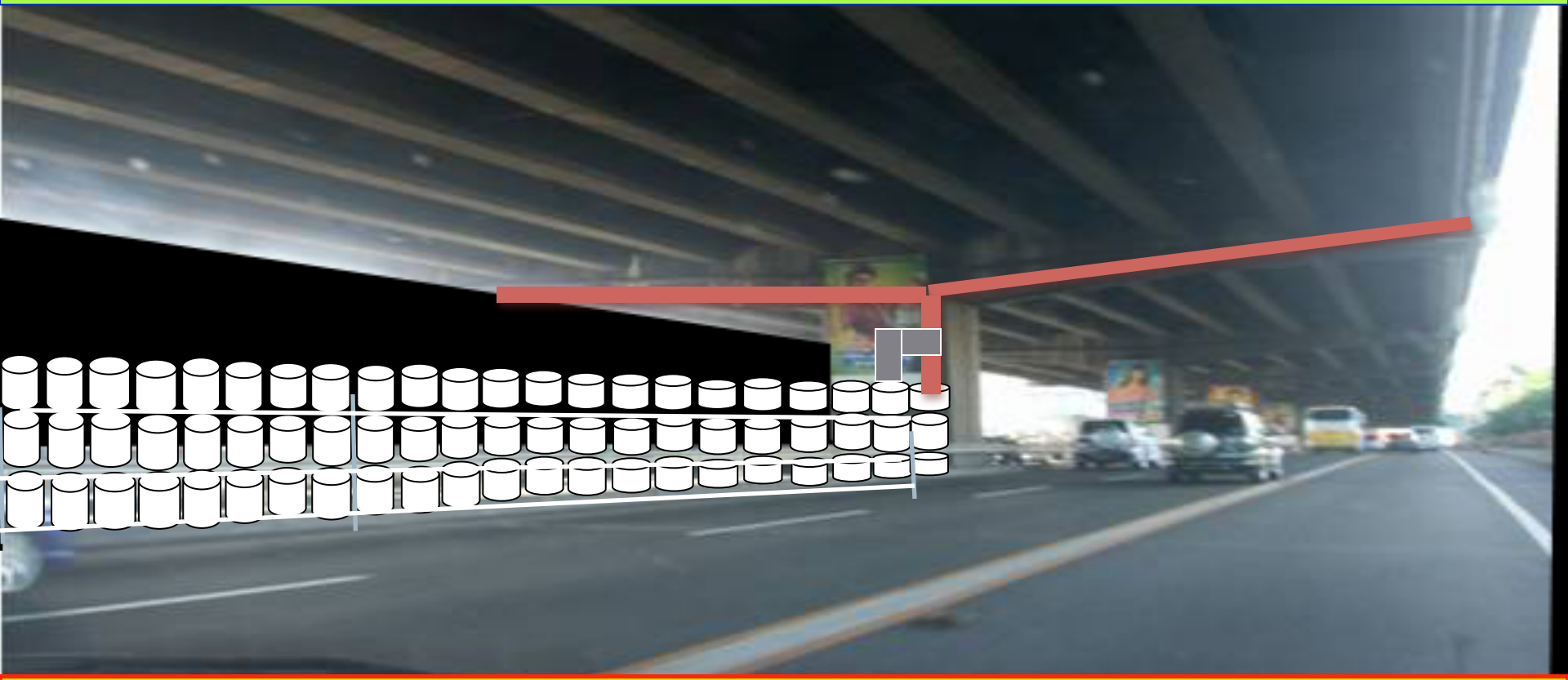
FRONT VIEW



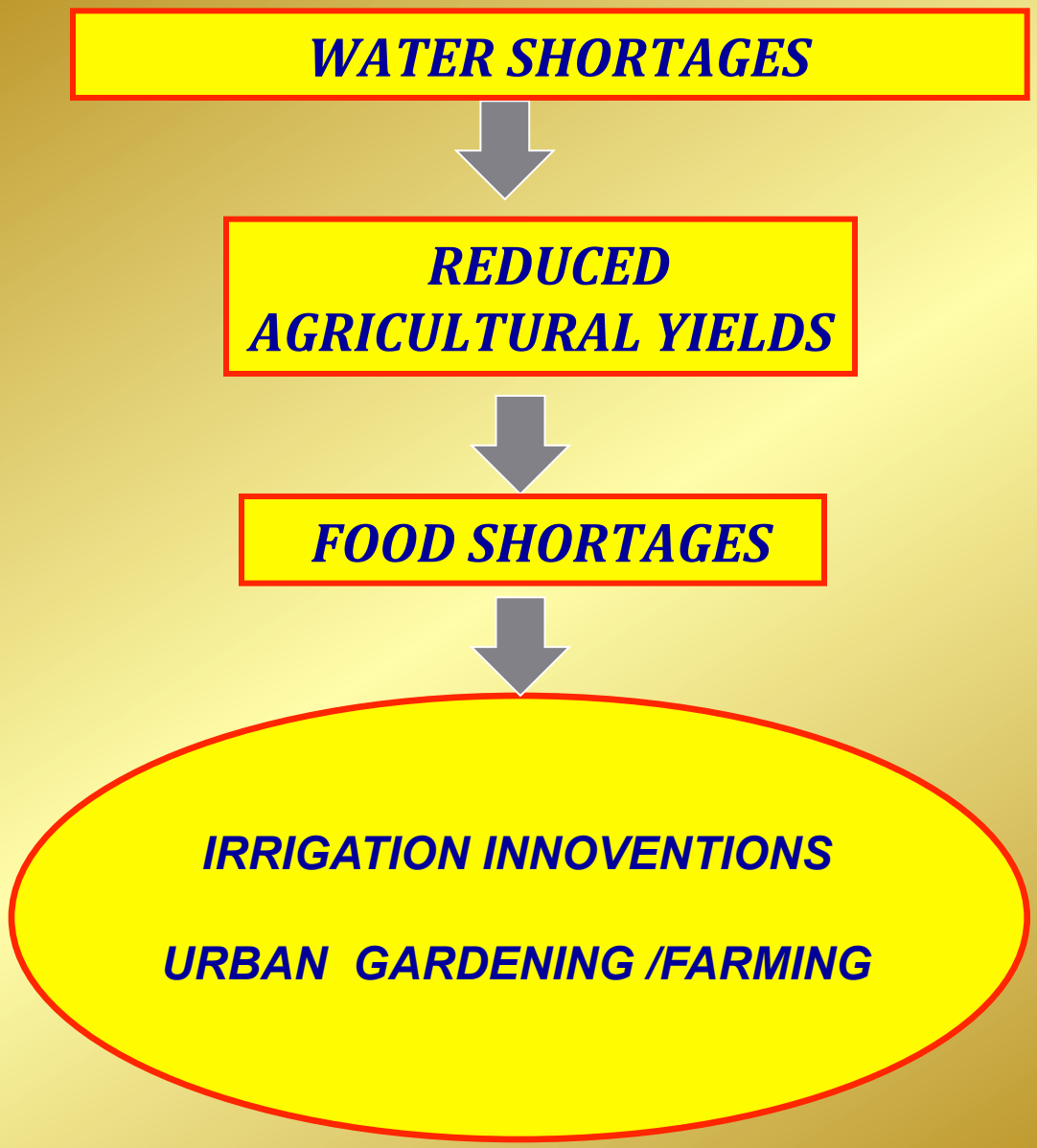

A
COMMON LAUNDRY AREA
LOWER
OFFICE / CONDO PENTHOUSE
IRHS
TOP
FLOOR
COMMON LAUNDRY AREA
MULTI-PURPOSE
AREA
EXTENDED CANOPY.
HALF M FOR ROOF
URBAN MICRO FARMING
2 M EXTENDED CANOPY.
HALF M FOR ROOF
URBAN MICRO FARMING.
HALF METER AT THE
BACK PORTION FOR IRHS.
THE 1 METER
PERIPHERAL FOR
JOGGING AREA
MULTI-PURPOSE
AREA
A
TOP VIEW

FUTURE RAINHARVESTER TANKS FOR SIDEWALLS AND FENCES

INSTALLATION OF IRHS UNDER THE SKYWAYS FOR USE BY THE COMMUNITIES, MOTORISTS AND FIRE DEPARTMENTS : A RECOMMENDATION



ESTIMATED HARVEST CAPACITY OF A 30 M X 40 M SPAN = 2,300 CU.M. / YR. OR 192 CU.M /MO.
ESTIMATED RAINWATER HARVESTER I0 KMS DISTANCE WITH ALTERNATE HARVESTER 192 MODULES SET
RAINWATER HARVEST = 24,000 CU.M./MO OR 288,000 CU.M./YR.= GOOD FOR 8.000 INHABITANTS


WATER SHORTAGES
REDUCED AGRICULTURAL YIELDS
FOOD SHORTAGES
IRRIGATION INNOVENTIONS
URBAN GARDENING /FARMING

ROOF TOP AND URBAN FARMING USING RAINWATER COLLECTED - December 8,2011

ROOF TOP FARMING USING RAINWATER COLLECTED

ROOF TOP GARDENING

VISIT OF GRADUATE SCHOOL STUDENTS OF HOLY ANGEL UNIVERSITY (HAU) DEC. 4, 2016

VISIT OF DAUGHTER FROM THE U.S JANUARY DEC. 9, 2017

"The best time to plant a tree was 20 years ago. The next best time is today."

- Chinese proverb

ENCOURAGE TREE PLANTNG AND URBAN FARMING USING RAINWATER COLLECTED

CONDOL , UBE, STARFRUIT , MANGOES & COCONUT HARVESTED USING RAINWATER AS IRRIGATION

CONDOL GROWING IN TAMARIND OR MANGO OR SANTOL TREES

CONDOL , UBE, STARFRUIT , MANGOES & COCONUT HARVEST IRRIGATED USING RAINWATER

PORTABLE SMUDGER OR "PAUSOK"

OTHER CREATIVE RESEARCH

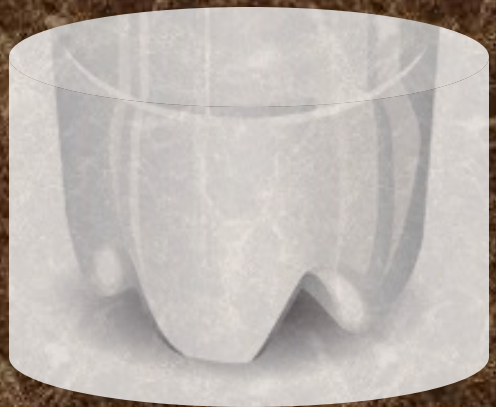
RECYCLING PLASTIC BOTTLES

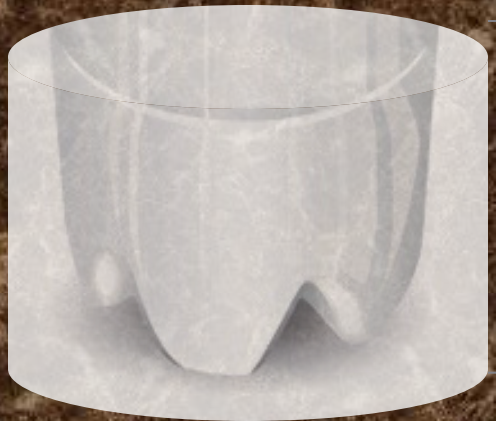
IRRIGATION FOR ROOF TOP / URBAN FARMING USING RAINWATER CONTAINER

RECYLING PLASTIC BOTTLES AS PRESSURE, OSMOSIS OR DRIP IRRIGATION FOR ROOF TOP & URBAN FARMING

PIN HOLE LOCATED ABOUT ½" OR 2CM FROM THE BOTTOM

RECYCLING PLASTIC BOTTLES AS PLANT POTS WITH PERFORATION : METHOD 1



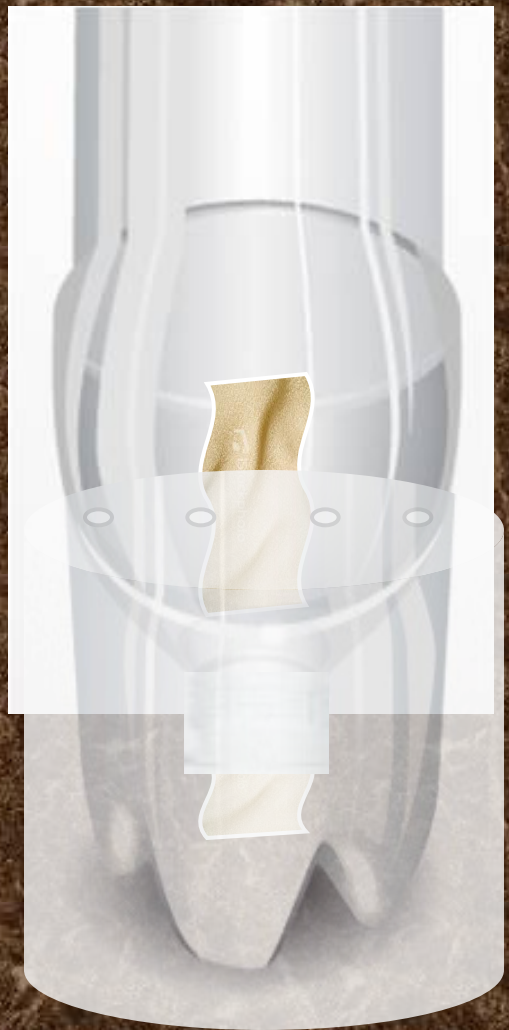


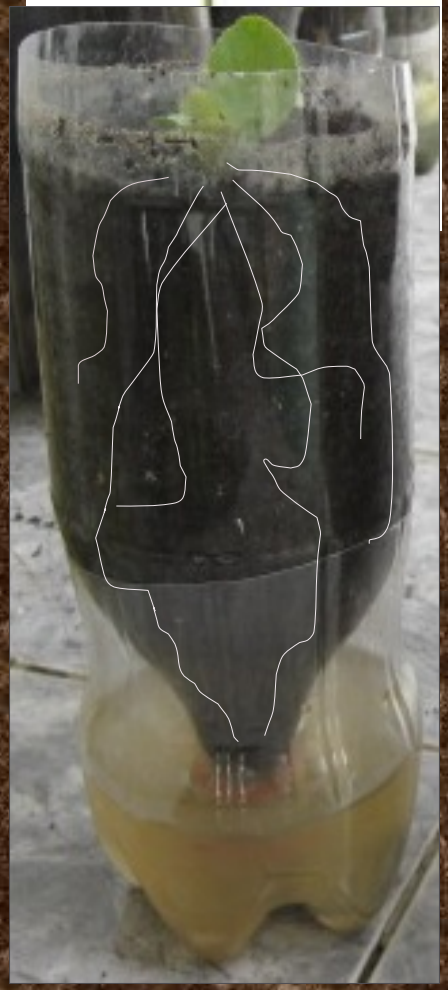
8 CM (3”)

10 CM (4”)
TO
12 CM (5”)

RECYCLING PLASTIC BOTTLES AS PLANT POTS : DIRECT WICK METHOD 2

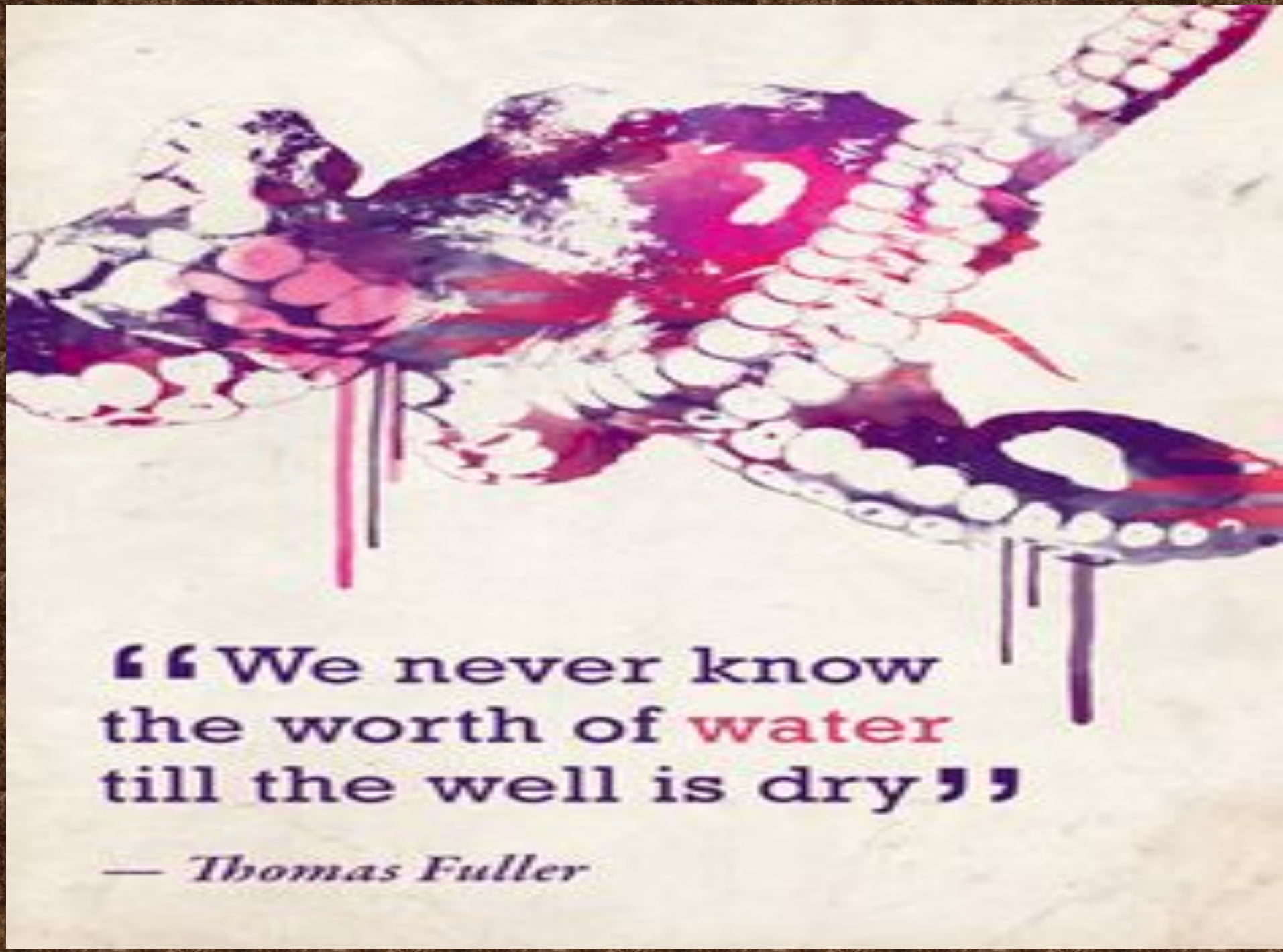
FOLDED CLOTH
SIZE 20 CM X 20 CM (8" X 8")





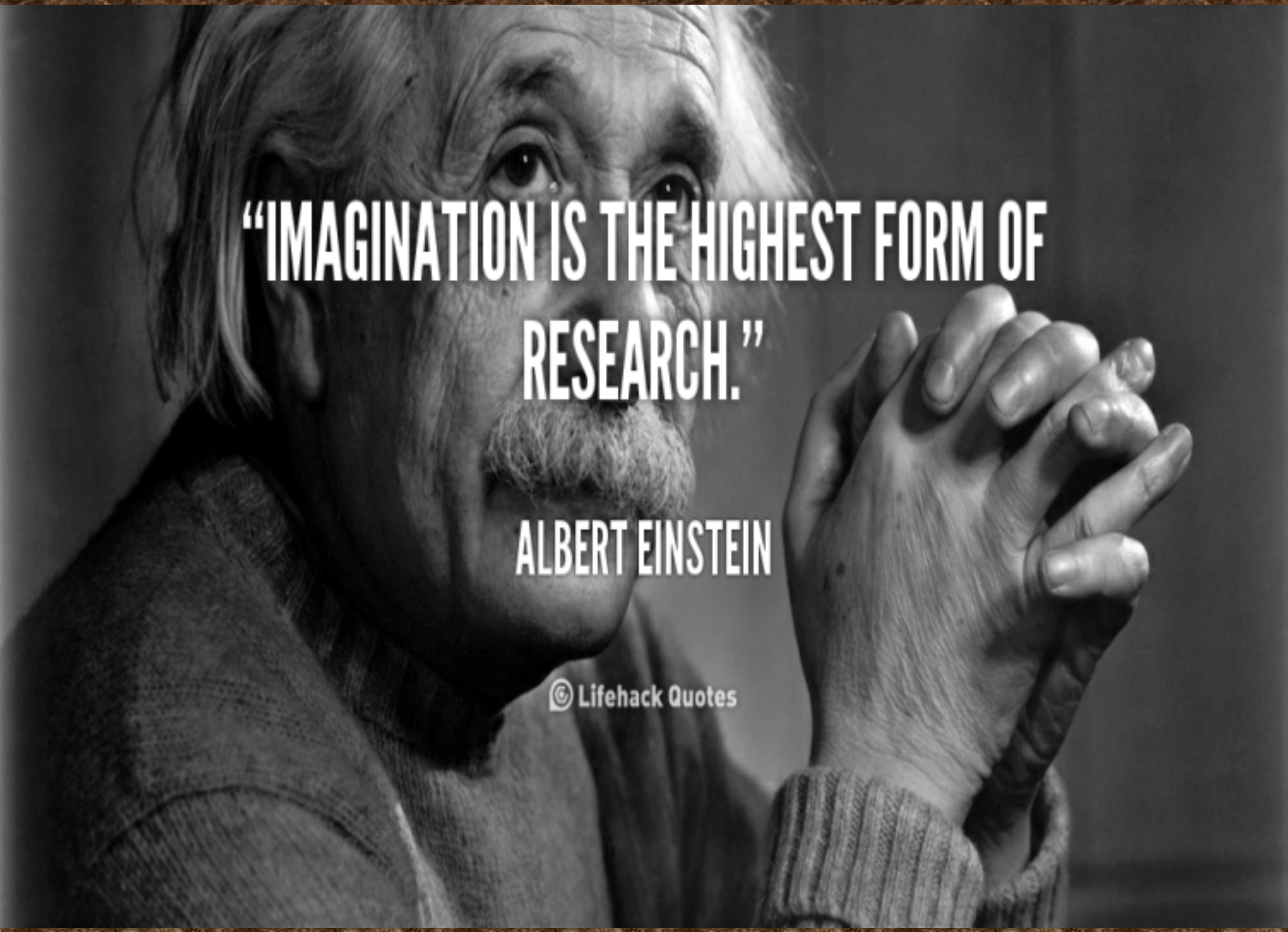
PREPARING PLASTIC BOTTLES AS PULSE IRRIGATION

RECYLCED PLASTIC BOTTLES AS PULSLE IRRIGATION


"We never know
the worth of water
till the well is dry"
— Thomas Fuller

REMEMBER ! ! !

“PEOPLE WHO GROW UP WITHOUT A SENSE OF HOW YESTERDAY HAS AFFECTED TODAY ARE UNLIKELY TO HAVE A STRONG SENSE OF HOW TODAY AFFECTS TOMORROW”


“IMAGINATION IS THE HIGHEST FORM OF RESEARCH.”
ALBERT EINSTEIN
Lifehack Quotes

OPEN FORUM

CONCLUDING STATEMENT

LET ME STATE THAT CLIMATE CHANGE EFFECTS WILL REACH ITS WORST DIMENSIONS IN THE VERY NEAR FUTURE.

DISASTERS ARE INEVITABLE AND BOUND TO HAPPEN.

WITH CREATIVE INNOVENTIONS AND ANTICIPATION COUPLED WITH THE GOOD INTENTION TO HELP, WE WILL BE ABLE TO CUSHION THE EFFECTS OF THESE IMPENDING DISASTERS.

PRACTICAL / DOABLE / APPROPRIATE INNOVENTIONS ARE EXISTING AND AVAILABLE AS DISCUSSED.

EVERYONE HAS THE RESPONSIBILITY TO TAKE ACTION AND DO HIS PART, ... FOR WHATEVER PRO-ACTIVE OPTIONS WE IMPLEMENT, WILL BE OUR LEGACY FOR THE SUCCEEDING GENERATIONS AND . . . . .

MANKIND SURVIVAL .

THANK YOU!
WISHING EVERYONE AN ENJOYABLE AND CREATIVE INNOVENTIONS DAY

SEMINAR 23
SGRA' S KKK RESEARCH ADVOCACY
MAY 7, 2017 , AMECOS LECTURE ROOM

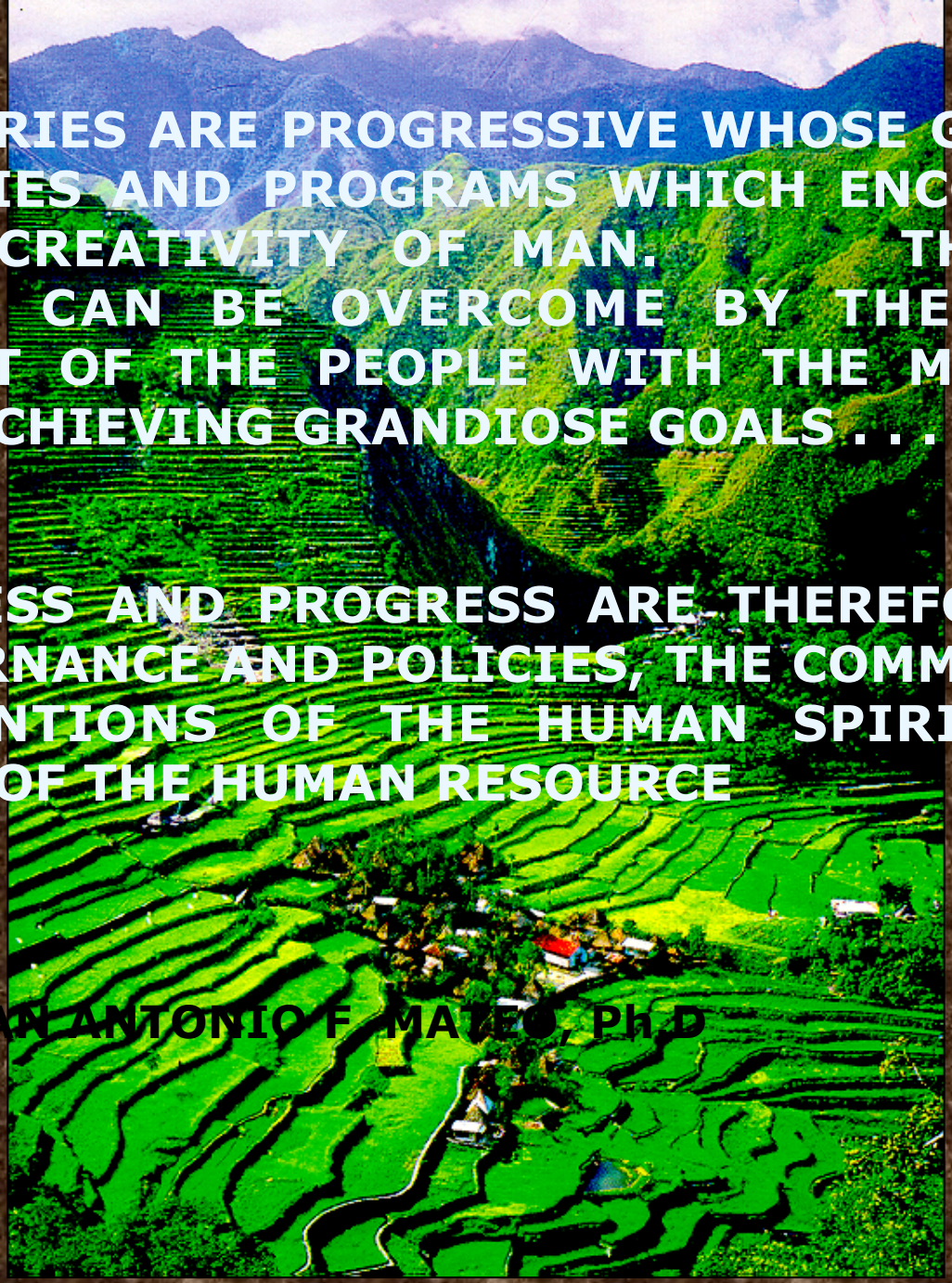
INNOVENTIONS VS CLIMATE CHANGE EFFECTS

BY DEAN ANTONIO F. MATEO, Ph.D.

WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO) 1994 BEST INVENTOR

RESEARCH FELLOW , SINGAPORE ROYAL INSTITUE OF ENGINEERS

RAINWATER HARVESTING SYSTEM / ENGINEERING CONSULTANT



COUNTRIES ARE PROGRESSIVE WHOSE GOVERNMENT HAVE POLICIES AND PROGRAMS WHICH ENCOURAGE THE ESSENTIAL CREATIVITY OF MAN. THE LACK OF RESOURCES CAN BE OVERCOME BY THE DEPTH OF COMMITMENT OF THE PEOPLE WITH THE MISSION AND VISION OF ACHIEVING GRANDIOSE GOALS . . . .

SUCCESS AND PROGRESS ARE THEREFORE ABOUT GOOD GOVERNANCE AND POLICIES, THE COMMITMENT AND GOOD INTENTIONS OF THE HUMAN SPIRIT AND THE CREATIVITY OF THE HUMAN RESOURCE

DEAN ANTONIO F. MATEO, Ph.D

WATER SHORTAGES

WATER SOURCE DEVELOPMENT & EFFICIENT WATER UTILIZATION

CREATIVE ENGINEERING INTERVENTION

LEAK CONTROL & RECYCLING